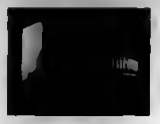

A new breed of hybrid parallel processor bridges the gap between MPP and SMP. Buyer's Guide, page 77

COMPUTERWORLD

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Microsoft cranks 32-bit heat

▸ *Pressure is on for huge Win 3.1 installed base*

By April Jacobs and Sharon Gaudin

EVEN THOUGH more than 80% of its large corporate users remain committed to 16-bit computing, Microsoft Corp. is starting to aggressively push customers toward a 32-bit migration.

Microsoft has already dropped support for the Windows 3.x generation in new versions of popular packages such as Microsoft Office and development tools such as Visual C++ and Visual Basic.

The move hasn't gone unnoticed. For example, last May, developers who use Visual Basic 4.0 complained it didn't work well with Windows 3.1. It worked better with Windows 95 or Windows NT, and it wasn't easy to port applications back and forth between 16- and 32-bit environments, they said.

"Microsoft knows there is still a lot of 3.1 out there, but they wish we would just all move on and forget about it," said Scott Burkhalter, a software engineer at Interface Systems, Inc. in Ann Arbor, Mich.

Microsoft, page 16

"My preference is not to put shackles on employees. But ..."

Want training? Just sign here...

By Julia King and Robert L. Scheier

IT'S PAYBACK TIME for IS employees who get company-financed training or learn other valuable skills on the job only to take their highly desirable expertise elsewhere.

More and more, worried employers require information systems workers to sign contracts that require them to reimburse training costs — which can run $10,000 or higher — if they move on too quickly after the training is completed. And in one case, an employer sued to prevent former staffers from doing certain kinds of work at another company.

Both events raise a larger issue: Can employers claim ownership of skills or information that workers learn on company time and at company expense?

"Five years ago, training paybacks were the exception. Now they're becoming more and more standard," said Rick Partridge, group manager for information systems human resources at Georgia-Pacific Corp. in Atlanta.

Brain drain, page 28

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New product rollout begins next month. Page 3

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SPAM ATTACKS GUNK UP NETWORKS
Effects of mass mailings sometimes aren't intentional. Page 10

AlliedSignal Aerospace CIO Paul Hoedeman: SQL Server is used for "little engineering department applications"

SQL Server hobbled by NT dependence

By Craig Stedman

EVEN AS Windows NT finds a seat at the enterprise table, Microsoft Corp.'s companion SQL Server database is getting left off many an invitation list.

Microsoft is gearing up for a major assault on corporate database applications late this year, but some users and analysts said this is one case where Microsoft's devotion to NT may work against it.

The sticking point for corporate users is that SQL Server runs only on NT. Companies

SQL Server, page 16

UUnet readies ISDN hybrid

▸ *New service could boost speed, cut costs*

By Mitch Wagner

UUNET TECHNOLOGIES, INC. this week will announce availability of a service that offers high-speed Internet access over regular telephone lines.

The service combines Digital Subscriber Line with Integrated Services Digital Network and is called IDSL. UUnet said the service will be useful for remote access to the Internet and corporate intranets, as well as World Wide Web site hosting. It is developing the technology in conjunction with its parent

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NEWSPAPER

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The global economy is here; is your company a player? The first of our Global Innovators series reveals how **multinationals** balance worldly status with local know-how. A lot depends on well-coordinated technology efforts, flexibility and global information-sharing systems. **Pullout follows page 40.**

UP FRONT

Microsoft view

I talked last week with Nathan Myhrvold, Microsoft's chief technology officer, about Java and network computers. Here are some excerpts. Write me at the address below and tell me what you think about his comments. I'll publish a mix of reactions in an upcoming issue. You can read the whole interview at our Web site.

How to address IS concerns about the growing size of desktop software: "Through more software. Computers are complex devices. You only get simplicity by putting a lot of work — a lot of code — into making them simple. Graphical computing or speech recognition requires a lot of functionality. And how do you get that? You write some code."

On network computers: "The way to leverage your investment is for us to make the improvements to make managing your software easier, [not by] throwing away all your PCs and rewriting all your software in a language none of your programmers knows."

Tell me what you think about these comments.

On Java: "A mildly interesting programming language. We're a language company, and we're going to support it enthusiastically. [But] a good programmer can write a good program in any language. Porting an app to Java is like porting from Fortran to C. The application doesn't get any better, but you have to do a lot of work."

On Java interpretive applets and the virtual machine: "Java has been successful at being an interpretive programming language that came out just as the Web was coming around. So if you wanted to make a little eye candy for your Web page, Java was a great way to do it. And there's the promise you can do a variety of other things with it."

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

THE FIFTH WAVE
BY RICH TENNANT

"TELL THE BOSS HE'S GOT MORE FLAME MAIL FROM YOU-KNOW-WHO."

E-mail Rich Tennant at theywave@tiac.net

Visual Studio takes big step

▸ *Microsoft development tools move toward common interface*

By Sharon Gaudin

WHEN MICROSOFT CORP. releases Visual Studio 97 on March 19, it will take a major step toward integrating its various application development tools.

But the company also has a longer-term plan to fully mesh its development environments, sources said.

SAVING MONEY

That next integration step could speed software development even more and save information systems shops the money they spend to train developers in different languages

"Sometimes we need to write in Visual Basic, and even though I don't do [Visual Basic], it would be much easier for me to do it if it had a common interface with Visual C++," said Daniel Bouganim, a Visual C++ programmer and vice president of software at Virtual Class, a development and consulting firm in Valencia, Calif.

"As it is now, it's very difficult to make that switch. I would never jump in and try to learn [Visual Basic]," he said.

SHARE AND SHARE ALIKE

Not all the tools in Microsoft's Visual Studio '97 package will share a common interface

Share a common interface
- Visual C++
- Visual J++
- Visual InterDev

Have their own interface
- Visual Basic
- Visual FoxPro

Visual Studio repackages Microsoft's development tools — Visual C++, Visual Basic, Visual J++, Visual FoxPro and Visual InterDev — to give the individual tools common libraries and access to common third-party tools. The products also will still be sold individually.

But the first release of Visual Studio doesn't have the tools sharing a single environment. For example, there is no common look and feel with similar tool bars and options.

Steve Ross, program manager of Visual C++ at Microsoft, said the company has no immediate plans to match all the environments in this way.

But sources close to Microsoft said the company is looking to mesh the tools into a common environment.

Several sources said the new version of Visual Basic will be the template on which the other changes will be based.

"It's going to be the common denominator programming language throughout Microsoft. Everything will evolve around [Visual Basic]. Everything," said Mike Massa, president of Massa Computer Corp. in East Northport, N.Y.

Visual Basic developers outnumber developers who use any of Microsoft's other tools.

Sources said the changes should be coming with the next few releases of each tool.

Users were philosophical. "Like anything else, people either love or hate the [Visual Basic] environment," said Dave Lingren, director of advanced development at Dunsgate, the IS division of The Dun & Bradstreet Corp. in New York. "It's sort of like moving from Windows 3.1 to Windows 95. Like it or lump it, they move along."

Microsoft aims for stronger link among PC, mainframes

By Sharon Gaudin

MICROSOFT CORP. is trying to build a stronger link between the PC and the mainframe via two upcoming application development projects code-named Cedar and Thor.

BREAKING THE BARRIER

Neither product has been officially announced. Cedar and Thor could make it easier for component-based applications on the client to communicate with and invoke legacy Cobol programs on the mainframe, said Steve Ross, product manager of Visual C++ at Microsoft. The client could run on Windows 3.1, Windows NT or Windows 95.

"[Microsoft] is breaking the Cobol barrier," said Mike Massa, president of Massa Computer Corp., a developer in East Northport, N.Y. "Right now, you have the Visual Basic world and the Cobol world, and it's hard to connect them. When a PC can talk to a mainframe as easily as it talks to a server, that's really nice."

Companies that are trying to connect the two worlds have to build their own gateways between client applications and the mainframe.

Cedar would provide a shrink-wrapped option for those companies.

Cedar serves as a gateway between component-based applications on the client and the Cobol application on the mainframe, Ross said.

Hear the following @ Computerworld

- **DOING BUSINESS:** What customers are saying about doing business over the Internet. (www.computerworld.com/commerce/features/openmarket.html)
- **JAVA'S FUTURE:** Gartner Group analysts talk about what's ahead for Java, packaged applications and other software trends. (www.computerworld.com/news/970304.gartnerradio.html)
- **INFO OVERLOAD:** Alice LaPlante discusses how information technology executives deal with information overload — and make your own voice heard in our QuickPoll. (www.computerworld.com)

Rally news updates: (800) 348-9262

- If you need to know what's going on in the industry but aren't near your PC, call the *Computerworld* phone line.

Sybase hits comeback trail

By Craig Stedman

SYBASE, INC. at long last plans next month to unveil the recovery strategy it has been crafting since a mid-1996 management shake-up.

The Emeryville, Calif., company on April 7 will announce a bevy of key products, including a new release of its SQL Server database, code-named Gryphon.

It is about time, said several SQL Server users who have watched nervously as Sybase's sales stagnated and rivals such as Oracle Corp. and Informix Software, Inc. trampled all over it in marketing.

"Maybe floundering isn't quite the right word, but Sybase has been sitting there in neutral," said Terence Light, manager of systems development at United Grain Growers Ltd. in Winnipeg, Manitoba. The grain and farm products distributor runs home-office applications and its 180 grain elevators on Sybase SQL Server.

BACK ON TRACK?

With the announcements, Sybase "finally seems to have an idea of what it should be doing," Light said. "But it's always harder to come around and be successful a second time."

After three quarters of losses last year, Sybase managed to eke out a small profit in the final three months of the year. But that was largely because of cost-cutting moves.

International Data Corp. in Framingham, Mass., estimated that Sybase's database sales fell 17% last year, dropping the company from second to third in market share.

Sybase officials confirmed that the company's bid for reemergence, which will be outlined at its user group conference in Orlando, Fla., will include the following:

- Gryphon, a SQL Server 11 upgrade with new features such as parallel querying and application queues that separate users into different virtual servers.
- Jaguar, a distributed application server for multitier applications involving SQL Server, other databases and the Internet.
- Adaptive Server extensions to SQL Server that support text, image and time-series data.
- Row-level data locking, expected in an upcoming SQL Server 12. In the current version, SQL Server locks entire database pages as a user updates information, which closes off data and prevents it from running SAP AG's R/3 applications.
- A new version of the Sybase IQ decision-support database.

Steve Wall, vice president of investment systems at Mellon Capital Management Corp. in San Francisco, said SQL Server is strong in transaction processing. But, Wall said, Sybase is behind the curve on supporting features such as row-level locking, and its financial travails have him considering adding Oracle to his database mix.

"People like us have started using the O-word," Wall said. "Even now, there remains concern about [Sybase's] ability to perform financially. They're just treading water right now."

PUMPING UP OS/390

IBM's OS/390 Version 3.0 will feature 42 enhancements

- Extended Unix services, including a permanent Unix kernel and Web threading
- Tightly integrated secure Web server with free TCP/IP sockets for IMS and CICS database applications
- Ability to recover from hardware failures without having users log on again
- Internet BonusPak II with sample Web pages
- Optional TCP/IP printing facility

IBM speeds timetable for OS/390 releases

▸ *Users wary of constant upgrades*

By Tim Ouellette
SAN FRANCISCO

IBM WILL KEEP to a tight six-month schedule for upgrades to its latest mainframe operating system when it ships OS/390 Release 3 on March 28.

But mainframe shops accustomed to a wider gap between releases may think twice before jumping in.

IBM officials briefed attendees here last week at Share's biannual user group conference on the range of features and functionality added to OS/390.

The operating system is the next generation of MVS and integrates previously separate MVS system products. Release 3 adds 42 new features and products requested from various IBM user groups, including Share, said Randy Stelman, program manager for OS/390 technical marketing at IBM.

Those items include an integrated Internet Communications Security Server; support for native Asynchronous Transfer Mode network protocols at 155M bit/sec. to handle multimedia file serving without changing applications; enhanced Unix performance on the OS/390; and support for fully distributed object applications.

But users whose installation experience with Release 2 was cumbersome due to documentation problems agreed that they will keep a wary eye on Release 3.

"I like that they are doing integration testing of the OS/390 package before they ship," said Greg Thompson, a data center manager at US West Communications, Inc. in Seattle. "But it was obvious the products were just dumped in together in OS/390. The documentation assumes they are all separate products, while I need a package that I can lay down and go with."

But users said the OS/390 code has been solid, and they will continue to try to keep up with the upgrades, even with Release 4 due out in the fall. That release will include support for Java application development, IBM officials said.

& Sabre handles peak computing load with mix of mainframes. Page 43

Microsoft plugs security hole in Explorer

By Justin Hibbard

MICROSOFT CORP. last week scrambled to fix a security hole discovered in its Internet Explorer 3.0 World Wide Web browser.

The hole allows a Web page author to write a page that can run commands on a user's PC when the page is downloaded by Internet Explorer.

The problem occurs only in the 3.0 and 3.01 releases of the browser for Windows 95 and Windows NT.

Students at Worcester Polytechnic Institute in Worcester, Mass., discovered the flaw and reported it to Microsoft last week.

Microsoft posted a patch for the 3.01 browser on Tuesday and for the 3.0 browser on Wednesday. Both patches are available at www.microsoft.com/ie.

Microsoft said none of its customers reported security violations.

Distributing the patch will be a small inconvenience for information systems managers at Coopers & Lybrand LLC in New York, according to Bill McManus, manager of strategic technology. Coopers & Lybrand has rolled out Windows 95 and Internet Explorer 3.0 to only five offices so far. But the firm eventually will install the browser on 15,000 desktops.

"If we had a full-scale deployment of [Internet Explorer] now, we would be fairly annoyed," McManus said.

The company posted the patches to its internal Web site and Notes databases and broadcast an electronic-mail message to IS managers and end users, urging them to install the fixes.

NO PLACE LIKE ... Desperate for IS talent, midsize cities try to lure techies. Careers, page 88

BUILDING BLOCK: Bechtel intranet speeds construction projects. The Internet, page 61

FUTURES: Chicago Board of Trade links high-tech with hand signals. Corporate Strategies, page 65

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Lucent server eases software distribution

By Patrick Dryden

INTRANET DISTRIBUTION

DELIVERING software to users is still a big chore for systems managers, even with somewhat automated distribution tools.

Now Lucent Technologies, Inc. wants to ease that task by enabling end users to fetch new packages or updated versions from the corporate intranet.

Lucent this week will turn its in-house software distribution server into a commercial product called Terranova Express, *Computerworld* has learned.

But observers said the approach may simplify delivery only in situations where all users have the right to run licensed or internally developed applications.

Terranova Express is a subscription server that warehouses programs, distributes them according to privilege policy, meters usage and handles accounting chores.

> **"Why buy something new, since applets for thin clients will change the entire task of software distribution over the next three years?"**
> **– Mitch Hull, Florida Power**

"This sounds useful to automate the labor-intensive process of filling new software requests and to meter usage — but only for site-licensed titles," said Mitch Hull, director of software development and support at Florida Power Corp. in St. Petersburg.

Terranova Express may have fit well in a lab environment where developers could buy whatever software they wanted, said Chris Germann, an analyst at Gartner Group, Inc. in Stamford, Conn. But Lucent "will run into unforeseen business problems in the corporate environment," he predicted.

Mainly, Lucent's approach lacks a way to handle the complicated approval process in place at most organizations, Germann said. It could help distribute and track software licensed across an entire site, he said, "but you don't want to let any Joe Blow on the network download any title."

"Without ample controls, it would be an in-house candy store," Hull said.

But the new tool provides enough user identification parameters to allow managers to establish access policies, said Joe Popolo, executive vice president at reseller Programmers Paradise, Inc. in Shrewsbury, N.J.

Popolo disclosed that his company plans to use Terranova Express as the core of a software management outsourcing service planned to begin this summer.

APPROVED USERS ONLY

Programmers Paradise will update packages on a server inside a customer's firewall and let approved users download from it. The company would audit usage and purchases for both the customer and publishers. Five corporate customers are considering that option, Popolo said.

Such a service might make sense if the price is right, Hull said. "We could get software to users sooner and eliminate the responsibility of keeping up with the latest releases," he said.

Lucent should have licensed Terranova Express instead of attempting to enter a competitive market with in-house software, said Rob Enderle, an analyst at Giga Information Group in Cambridge, Mass. Lucent lacks recognition as a systems management vendor, according to Enderle. Any advantage comes from experience in building automated, high-availability telecommunications systems, he said.

Most software distribution systems use automated scripts that push software to local servers for user retrieval and synchronize versions among clients.

Terranova Express will ship this month and will cost $11,795. Lucent, formerly AT&T Bell Laboratories, is based in Murray Hill, N.J.

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[illegible]

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POSTSCRIPT

Cashing in on SAP skills isn't so easy

▸ *Technical knowledge alone may not be enough*

By Randy Weston

YOUR COMPANY is two years in to a SAP AG R/3 implementation, and you're ready to take the skills you've gained to the open market with dreams of tripling your salary. Better think again, or at least lower your salary demands, especially if all you bring to market is SAP technical knowledge.

A new survey conducted by Austin-McGregor International, a high-tech recruiting firm in Dallas, shows that companies looking for skilled SAP help aren't necessarily willing to pay what those with such skills are demanding.

For example, 42% of the senior-level SAP consultants surveyed — described as those with more than three years' experience with the software — expect to earn $125,000 or more. But only 4% of the SAP companies surveyed offer salaries of more than $125,000.

"Simply put, some SAP consultants have developed delusions of grandeur," said Randy Norman, Austin-McGregor's director of information technology recruitment. "Two years ago, it was much harder to find people with SAP skills." These days, the volume of applicants is way up, he said.

In fact, those with strictly technical SAP skills may be facing the unemployment line in the next year or two. But for workers with solid business knowledge and re-engineering experience as well as SAP technical skills, the road should be golden for a few more years.

AVERAGE SALARY OFFERS

Level	Salary if recruited from a user company	Salary if recruited from a consultancy
Entry	$60,000 to $70,000	$75,000 to $80,000
Intermediate	$70,000 to $80,000	$80,000 to $95,000
Midlevel	$85,000 to $100,000	$95,000 to $115,000
Senior	$100,000 to $125,000	$115,000 to $130,000

Source: Austin-McGregor International, Dallas

THEY'LL CALL YOU

Demand for levels of SAP performance

Entry level (training to 12 months)	16%
Intermediate (12 to 24 months)	100%
Midlevel (24 to 36 months)	92%
Senior level/ project leader (more than 36 months)	68%

Base: 50 firms currently implementing SAP and using consultants; multiple responses allowed

Source: Austin-McGregor International, Dallas

Although many companies are unwilling to pay exorbitant salaries, there is a high demand for skilled people with re-engineering experience that goes beyond the technical aspects of SAP software. That demand often comes from companies that lost SAP workers to other companies, a trend that has spurred some companies to use employee contracts to stop the brain drain (see story, page 1).

"The business-driven SAP consultant has a significant [career] life span over the next three to five years," said Alfred Grunwald, CEO at Deloitte & Touche's SAP consulting division in Chadds Ford, Pa. "But for the SAP technical configuration people, we see a significant excess in supply in the next 12 to 24 months," he added.

Austin-McGregor surveyed 50 of the 500 U.S. companies using SAP products and consultants. It also reviewed applications from 500 SAP consultant candidates. Norman said the study was conducted to reassess the compensation packages of clients, given the large pool of SAP-qualified people now available for hire.

Other surveys, including *Computerworld*'s Annual Skills Survey [CW, Nov. 18, 1996], also have reported an abundant supply of SAP technical skills.

Norman said he has standing orders from U.S. companies for 110 people with SAP skills. Many of the candidates he places are businesspeople, such as accountants or other professionals who have worked on an implementation project.

Glenn Purselley recently made a jump to the Dallas office of Big Six implementer Price Waterhouse LLP from Dallas-based Lennox International, Inc., a maker of heating and air-conditioning systems. While he garnered a 90% salary hike, Purselley said he has no illusions about the volatile nature of the SAP skills market on which he is banking his and his family's future.

"If I was an IT programmer who specialized in SAP, I might be more concerned about [long-term job stability]," Purselley said. "I would like to hope my background is diverse enough and more sales- and distribution-oriented that I could find another career path."

Some shine in name, despite higher pay

When the knock came on Glenn Purselley's door to become an SAP AG consultant, it took [illegible] customer service representative [illegible]

He spent [illegible] Lennox International. In the last year he learned [illegible] customer service representative, and in the last three years he was on the R/3 implementation team.

His job was to configure the order and distribution software modules for the company's [illegible] Canadian operations. But Purselley left before the [illegible] began, the U.S. rollout, which he said will be a multi-duplicate of the Canadian project.

"You could count on the [illegible] weekly," Purselley said of the recruiters who called Lennox's R/3 implementation team. "I struggled with the decision for a while. The offers were out there for some time, but I wanted to stay through the Canadian implementation."

He also had to consider his family. Being an SAP consultant often means living out of a hotel for months at a time, thousands of miles from home.

But the promise of a 30% salary hike, combined with boredom with his current job, made the timing seem right. So he followed three fellow Lennox employees to Big Six consulting firm Price Waterhouse.

Purselley and about 20 more of the original 30 to 60 people on Lennox's R/3 team took their SAP know-how to market, a skills drain that now hampers the last phase of the Lennox project.

The current project leader couldn't be reached for comment, but Purselley said that when he was leaving, several weeks ago, the company was scrambling to fill vacated positions and reorganize before it began the U.S. rollout. — Randy Weston

Sun servers target scientists

By Jaikumar Vijayan

SUN MICROSYSTEMS, Inc. this week will do its part for medical research and rocket science by rolling out a speedy new line of symmetrical multiprocessing servers for the technical market.

The systems give engineering and scientific users a faster and more-scalable platform than existing Sun systems for running large, compute-intensive applications, observers said.

The Ultra HPC (High Performance Computing) systems are basically rebranded versions of Sun's existing commercial Ultra Enterprise servers — with additional software and middleware layered on top.

"We got a really significant speed increase compared to our older Sun systems," said Simon Warfield, an early user of the system and a research fellow at the surgical planning laboratory at Brigham & Women's Hospital in Boston.

"Some algorithms that used to take 15 minutes to execute now take just three minutes," Warfield said.

Like Sun's commercial systems, the HPC servers range from a two-processor entry-level configuration that supports 2G bytes of memory, all the way up to a 64-processor system that supports up to 64G bytes of memory and more than 20T bytes of storage. Prices range from $44,000 to $2.5 million.

Sun, in Mountain View, Calif., competes with vendors such as Hewlett-Packard Co. in Palo Alto, Calif., IBM in Armonk, N.Y., and Digital Equipment Corp. in Maynard, Mass., in the technical and engineering server market.

& Sun HPC servers to get software for clustered server applications. Page 43

Corrections

In the *Premier 100* supplement distributed with the Feb. 24 issue, the corporate name and revenue figure for one honoree was incorrect. The correct honoree is Home Box Office; a revenue figure wasn't available.

In the Jan. 13 issue, incorrect publisher information was listed for a new book by Janet Ruhl. *The Computer Consultant's Workbook* is published by Technicon Books, P.O. Box 171, Leverett, Mass.

"Sears automates parts inventory" [CW, Dec. 23, 1996/Jan. 2, 1997] incorrectly identified Lawson Software in Minneapolis. Lawson was also inadvertently omitted from the company index in that issue.

A reporting error in "Amdahl rates a Buy" [CW, Feb. 24] incorrectly stated the rating of the Chicago Mercantile Exchange's newly installed Millennium mainframe. The correct rating is 160 MIPS.

Due to an editing error, the location of Fort McNair, the site of the National Defense University, was incorrectly reported in the Feb. 10 issue. It is in Washington.

Due to an editing error in the Feb. 17 issue, PeopleSoft's 1996 software sales were listed incorrectly. The correct figure is $253 million.

Clarification: Due to an editing change, comments by Michael Jaslowski of Allstate Insurance Co. were unclear in a Feb. 10 article on the three-dimensional user interface in Computer Associates International, Inc.'s Unicenter TNG enterprise management software. Jaslowski said he was initially skeptical about the 3-D interface but found it more user-friendly than a standard command-line interface after beta-testing it.

Oracle7 vs SQL Server

Features	Oracle	Microsoft SQL Server
[illegible]	YES	NO
[illegible]	90+	NO (NT Only)
[illegible]	YES	NO
[illegible]	YES	NO
[illegible]	From 1 to 400+ processors	From 1 to 8 processors
[illegible]	YES	NO
[illegible]	YES	NO
[illegible]	YES	NO
[illegible]	YES	NO
[illegible]	YES	NO
[illegible]	YES	NO
[illegible]	YES	NO
[illegible]	YES	NO
[illegible]	YES	NO
Spatial Data	YES	NO

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Tighter control of medical records urged

▸ *Report questions security of electronic records*

By Mindy Blodgett

THE NATIONAL RESEARCH COUNCIL is calling on the health care industry to improve the security of electronic medical records.

A report released last week by the council, which is the research arm of the National Academy of Sciences, seeks to raise public awareness about the privacy issues that surround electronic medical records. It also suggests several steps designed to improve security (see story below).

"What's new about this report ... is the urgency," said John Glaser, vice president and chief information officer at Partners HealthCare System, Inc. in Boston and a member of the council.

"We are seeing explosive growth in information technology investment in the health care industry. [Organizations] are moving from investing 2% in IT to more like 5% and 7%, and this will grow. The industry sees computerization as a way to cut costs, but they also need to face up to these risks. ... We hope this report wakes up consumers as well as the industry," Glaser said.

RISK SWITCH

"The tide is turning and health care organizations are switching from paper-based records to electronic records," said Carl E. Landwehr, director of the Computer Security Section at the U.S. Naval Research Laboratory in Washington. "By doing this, they change the set of risks to privacy posed by sending records across the country or between organizations."

Electronic records can be even more secure than paper ones. But until now, there have been few incentives to tighten protections in the form of regulations or public pressure, according to the report. At the same time, medical records are increasingly being posted online.

The report's goal is to prod Congress and the health care industry to act after years of discussion about privacy and medical records, Glaser said.

The lack of government regulation is a problem. There is a confusing patchwork of rules that regulate privacy and access. Some states don't even give patients access to their own medical records.

But the government is getting more involved, albeit slowly.

One piece of the Kennedy/Kassebaum Health Care Reform bill passed by Congress last year called for health providers to post medical records in vast databases, including those of consumer credit companies. The bill also called for the government to impose a "unique health identifier" number on every person, to be used in conjunction with all health care. But these measures have raised serious privacy concerns and have created more questions than answers.

ANOTHER ROUND

The Bennett/Leahy bill — the Medical Records Confidentiality Act of 1995 — languished before Congress and is being revised, according to legislative experts.

New legislation, filed by U.S. Rep. Gary Condit (D-Calif.), has included health care information protection in a bill addressing privacy issues.

Margaret Amatayakul, executive director of the Computer-Based Patient Record Institute, said she is studying the report. The institute monitors legislation and health issues on behalf of the health care industry.

Amatayakul said, "We think computerization is a good thing, but we understand the need for guidelines. ... Many times, even when people sign a waiver giving access to their information, they have no idea where the information then goes."

Keeping tabs on privacy

The National Research Council report is calling on health care providers to adopt technical improvements designed to protect privacy. They include the following:

- Give employees who have access to records a unique identifier password.
- Conduct frequent electronic audits to track who is accessing information.
- Use encrypted passwords, dedicated modem lines and special software to protect points in the system that are particularly vulnerable when remote access systems are set up.

The report also calls for the establishment of a new organization that would share computer threats within the health care industry, similar to the computer emergency response team at Carnegie Mellon University that oversees the Internet. — Mindy Blodgett

PATIENT CONFIDENTIALITY

[illegible] of electronic [illegible] the National Research [illegible] recommended:

1. A joint government and health care industry effort to develop and update industry standards
2. A new organization that shares information about computer threats in the industry
3. A federal "privacy" ombudsman for consumers
4. Additional access controls to restrict employees from obtaining information not necessary to their jobs

S H O R T S

Hackers hit NASA Web site

NASA's World Wide Web site shut down for 21 hours last week after hackers broke in to the site and posted a manifesto. The hackers criticized the commercialization of the Internet and threatened a wave of attacks on corporations that profit "from the misuse of the Internet." The group's statement was up for about 30 minutes before NASA officials pulled the plug, said Brian Dunbar, Internet services manager at the agency. Dunbar said it was pretty clear how the hackers had gotten in, and new security measures have been put in place. The server held scientific data, but none of the research data was breached, Dunbar said.

NT Service Pack beta ships

Two months after Microsoft Corp. released a buggy Service Pack 2 for Windows NT 4.0, the company last week shipped a beta version of Service Pack 3 that fixes the predecessor's flaws. The beta, sent to about 300 customers, is a new strategy for Microsoft, which wants to avoid a repeat of the systems crashes that plagued users who installed the previous version [CW, Jan. 13]. The public release is expected in 30 to 60 days.

Effort aimed at macro viruses

Microsoft and the National Computer Security Association are collaborating to combat macro viruses. The initiative is aimed at helping antivirus software vendors get more information from Microsoft in the battle against malicious macros. The program will include a newsgroup, early Microsoft beta releases for antivirus developers and a Web site with information on virus prevention. The move comes after Microsoft shipped Office 97 when no antivirus software was available to scan its new macro format.

Experienced IS hard to find

According to a recent poll, there are about 190,000 unfilled information systems jobs at large and midsize companies, including hardware and software vendors. The survey was conducted by the Information Technology Association of America (ITAA) in Washington, and 2,000 companies were polled. The ITAA said there are about 96,000 vacancies at user companies. The shortage of skilled workers and a decrease in the number of students pursuing computer careers will cause more companies to turn to outsourcers overseas, the ITAA concluded. Between 1986 and 1994, the most recent year for which figures are available, the number of computer science graduates in the U.S. dropped 43%.

Update of Visual J++ due

Microsoft's update to its Java-based development tool has an enhanced development environment and new wizards and tool kits. The company is releasing Version 1.1 of Visual J++ in two editions — a professional edition and a trial edition that can be downloaded free from www.microsoft.com/visualj.

Web-based training FAQ

"The Multimedia and Internet Training Newsletter" in Sunnyvale, Calif., has put together an online directory of frequently asked questions (FAQ) about Web-based training. Free information about the advantages and disadvantages of Web-based training is available for downloading at www.brandon-hall.com.

SHORT TAKES Sun Microsystems, Inc. last week released its JavaOS 1.0 operating system. JavaOS executes Java applications directly on the Sun SPARC and Intel Corp. x86-based hardware platforms. ... U.S. Robotics Corp. in Skokie, Ill., last week released upgraded versions of its Pilot organizer, the PalmPilot Professional and the PalmPilot Personal. Pricing ranges from $299 to $399. ... Oracle Corp. in Redwood Shores, Calif., this week plans to introduce Release 2.0 of its ConText Option server for managing and retrieving text stored in Oracle7 databases. Priced at $495 per user, the new version adds the ability to store pointers that can index and search documents on the Web. ... Lotus Development Corp. in Cambridge, Mass., has posted the first working copy of its Java-based business productivity applets, code-named Kona, to its Web site (www.kona.lotus.com).

UniForum '97: Not just Unix anymore

▸ *Trade show spotlight shines on emerging technologies*

By Jaikumar Vijayan

WINDOWS NT. The World Wide Web. Java. ActiveX. CORBA. Network computing. And, oh yes, Unix, too.

Welcome to UniForum '97, the industry's largest Unix trade show.

Scheduled to open this week in San Francisco, this year's UniForum show is expected to focus more than ever on emerging enterprise technologies and how to make Unix an integral part of them.

"There is going to be a much broader agenda than pure Unix at this year's UniForum," said Jean S. Bozman, an analyst at International Data Corp. in Mountain View, Calif.

ON TAP AT UNIFORUM

- Windows NT Business Solutions Pavilion: Migration tools, development tools and applications
- Open Group Pavilion: Network computing and ActiveX technologies
- Enterprise@Web: Demonstrations of Internet-enabled applications
- Linux Pavilion: Major vendors, developers and users that support the operating system

"There is a lot of Microsoft, Internet, legacy and mainframe stuff that people are working on coordinating with Unix," she said.

"The show is getting far more general-purpose than before," said Mary Hubley, an analyst at DataPro Information Services, Inc. in Delran, N.J. "Users are realizing that Unix environments cannot be just Unix anymore."

One user agreed. "It really speaks to the issue of where Unix is going," said David Krauthamer, MIS director at Parker Hannifin Corp. in Rohnert Park, Calif. "Everybody is beginning to realize that Unix is fitting in as a high-end Web server, database server or an E-mail server," which needs to be tied in to the rest of the enterprise, he said.

A POTPOURRI

In keeping with that trend, both the conference program and the exhibition floor at UniForum will focus on a range of network, Web and cross-platform integration tools. UniForum organizers said they expect nearly 100 vendors to demonstrate a range of software, hardware and tools relating to those technologies.

Jostling for space with mainstream Unix vendors will be a Windows NT Business Solutions Pavilion. It will feature migration tools, software and applications from multiple vendors.

And users can step in to a nearby platform-integration demonstration area where Unix and Windows NT vendors will demonstrate the interoperability of multiple systems, applications for managing such environments and software development tools for mixed Unix and Microsoft Corp. Windows NT environments.

Predictably enough, the largest exhibitors at the show are expected to be traditional Unix heavies such as Hewlett-Packard Co., IBM, Digital Equipment Corp., Data General Corp. and Unisys Corp. However, Sun Microsystems, Inc., one of the largest Unix players, won't participate in the show once again.

HP is expected to announce a follow-up to its PA-8000 64-bit chip as well as key security enhancements to its Internet bundle for Unix servers.

DG will privately demonstrate a prototype version of its Non-Uniform Memory Access server.

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E-mail floods cause network havoc

By Sharon Machlis and Barb Cole

ELECTRONIC-MAIL ADMINISTRATORS are finding that hacker attacks aren't the only source of E-mail floods that can drown their servers.

Whether the messages are external advertising "spams" or internal mass mailings, the rising volume of broadcast messages is causing lengthy delays and even crashes as networks strain to keep pace.

The mail server at Boston College in Chestnut Hill, Mass., recently went down for about five hours after a Florida-based painting company E-mailed the school's 15,000 students about summer jobs, according to Maureen Toohey, data security administrator at the college.

The spam wasn't an intentionally malicious attack, but the result was similar: Five staff people were tied up until late in the evening trying to block the flood and get the server back online. "This is the latest and greatest way of bringing down systems," Toohey said.

Brown University in Providence, R.I., was also a spam target, but network traffic monitoring helped stem the flood in progress. "The postmaster was dumping mail like mad," said Anne Oribello, management security officer at Brown. "We could have been down."

Many universities make their user lists publicly available on the Internet, so they are typically more vulnerable to mail floods from outside sources. And most don't have firewalls that can control all incoming traffic.

In private industry, where access to user lists is in many cases tightly controlled and firewall technology is more widespread, "spamming from the outside is typically not a problem," said Tim M. Crawford, technical project manager at National Semiconductor Corp. in Santa Clara, Calif. "There are spamming issues in corporations, though."

How to help curb E-mail mass-mailing problems:

Incoming

- Install firewalls to block messages from known Spam sites
- Monitor network traffic to stop heavy mailing before it crashes a server

Outgoing

- Set up policies that restrict message broadcasting
- Educate users to discourage mass mailings

Internal mass mailings — which often have nothing to do with work — can be a big systems burden, said Crawford, whose network has 18,000 users. "These mass mails can delay the delivery of messages by as much as 24 hours because they clog up our gateways."

MACARENA MISHAP

A Boston firm's server crashed last fall after employees E-mailed one another copies of a popular screen saver, the 1M-byte "Hey Macaroni" spoof of the Macarena dance fad [CW, Nov. 4, 1996].

The problem was solved when the company posted a single copy of the program on a server and told employees to download it from there instead of E-mailing it, said Eric Robichaud, CEO of Rhode Island Soft Systems, Inc. in Woonsocket, R.I., which created the shareware.

Some corporate network administrators institute policies that limit internal mass mailings. Others just try to encourage voluntary restraint.

"We can't really keep people from sending out mass mails, nor should we," Crawford said. "Our best hope is to foster an attitude within the company — perhaps through an E-mail policy — where employees use it responsibly."

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Internet World will reflect user interest in extranets

By Justin Hibbard and Barb Cole

BESIDES THE USUAL mud-slinging between Microsoft Corp. and Netscape Communications Corp., Internet World/Spring '97 will feature several "extranet" announcements.

An extranet is a secure connection among corporate intranets that lets businesses conduct transactions with partners, suppliers and customers.

"Netscape and Microsoft are planning on making this [show] the big play for who will win the browser war."
— Amy Wohl, Wohl Associates

User interest in extranets is growing, largely because of recent improvements in Internet-based electronic data interchange (EDI), a cheap alternative to EDI over leased lines, said Carl Lehmann, an analyst at Meta Group, Inc. in Stamford, Conn.

At the show this week in Los Angeles, Internet-based EDI vendor Actra Business Systems LLC will brief analysts on Business Document Gateway, its long-awaited Windows NT-based product. It exchanges EDI data through encrypted electronic mail, according to Geri Spieler, an analyst at Gartner Group, Inc. in Stamford, Conn.

Actra in Sunnyvale, Calif., a joint venture of Netscape and GE Information Services, Inc., last year said it will launch its product this month. But the company wouldn't say if it will launch the product at the show.

Meanwhile, Netscape will outline plans for its next-generation Internet server and client products. Marc Andreessen, senior vice president of technology, will discuss Netscape's strategy for helping companies build global networks that combine intranets, the Internet and extranets.

Netscape also will demonstrate Constellation, which will compete with Microsoft Corp.'s Internet Explorer 4.0 client suite as a PC desktop interface.

Microsoft will unveil a beta version of Internet Explorer 4.0, which can be used as the interface for Windows 95.

"Netscape and Microsoft are planning on making this the big play for who will win the browser war," said Amy Wohl, president of Wohl Associates, a consultancy in Narberth, Pa. "I'm not giving Constellation a high chance of making it."

Wohl said she doubts users will want to run Constellation on Windows 95 if Internet Explorer offers similar features and can function as the Windows 95 interface.

Microsoft also will roll out its long-awaited Exchange Server 5.0. The messaging server will gain support for several common Internet protocols, such as Post Office Protocol 3 (POP3) and Lightweight Directory Access Protocol.

It comes many months after beta testers sent Microsoft back to the drawing board by rejecting an earlier beta.

Microsoft appears to have pleased users who were looking for stronger Internet hooks in Exchange 5.0.

"I'm itching for [Exchange 5.0]," said Mark Schmidt, director of information systems at Heritage Broadcasting Group, Inc. in Tustin, Minn. The POP3 support in Exchange 5.0 will mean big savings because Heritage's remote users will be able to connect to the corporate mail server using a local Internet service provider, Schmidt said.

But not all users are jubilant. Bob Winterton, a systems specialist at Consolidated Edison Company of New York, Inc., said he wants to see the 16G-byte mail storage limit on Exchange servers lifted. That fix isn't due until later this year.

Few users trust OLTP on Microsoft, Netscape intranets. Page 61.

Announcements of note

Other events at this week's Internet World/Spring '97 trade show include the following:

- **MCI Communications Corp. and British Telecommunications PLC will announce plans for an international World Wide Web hosting service for corporate intranets.**
- **Sybase, Inc. is expected to announce asynchronous queuing software for managing database transactions across distributed networks, including the Web. Sources said the database software will ensure that transactions are completed, and will allow end users to run multiple database requests all at once.**
- **Oracle Corp. plans to announce general availability of a new version of its Web Application Server that adds support for transaction processing over intranets and the Internet. Web Application Server 3.0 has been in beta testing since December.**
- **Silicon Graphics, Inc. plans to announce server software for carrying multimedia in real time — also known as "streaming" multimedia. WebForce MediaBase Version 2.0 can download up to 10,000 simultaneous video streams over the Internet or intranets. — *Computerworld* staff**

'net/intranets to headline Brainshare

By Laura DiDio

ONCE AGAIN, the Internet, intranets and deploying Novell Directory Services (NDS) on other platforms will be the hot topics at Novell, Inc.'s annual Brainshare Developer's conference.

At Brainshare in two weeks, Novell is expected to unveil a blueprint of its Internet and intranet access software — a package called Border Services — along with products that plug some gaps in its product line.

Border Services, which lets users connect to the Internet from NetWare LANs, will run on stand-alone servers. It works with Novell's IntranetWare, Microsoft Corp.'s Windows NT Server or Unix servers.

The release of Border Services will include proxy services and firewall security services to secure data, filter out unwanted or unauthorized data and provide bidirectional control of users' World Wide Web access.

Six large NetWare users and three independent consultants said they were "somewhat concerned" about Novell's long-term outlook and its ability to compete with Microsoft.

But the users said they remain confident in the core NetWare and IntranetWare products. None of the users had plans for wholesale replacement of NetWare/IntranetWare in favor of Windows NT Server.

"Our strategy is coexistence. There's no compelling reason for us to move off of NetWare/IntranetWare. And we do feel Novell has been getting its act together to a degree," said Michael Crowley, chief information officer at Rich Products Corp. in Buffalo, N.Y.

Marc Herder, manager of data communications at the Dartmouth-Hitchcock Medical Center in Lebanon, N.H., agreed.

"We have NetWare applications that just aren't going away. But it is hard to tell what Novell's long-term direction is. No one is giving us a clear, concise road map," Herder said.

"The big-ticket item on my wish list is for Novell to finally deliver NDS on other platforms like Windows NT and Unix. When they do that, it will be a big advantage for users like myself," he said.

HIGH AND DRY

But Wayne Stein, director of the Midwest region at Lotus Consulting Corp. in Detroit, said large organizations are most likely to abandon NetWare for Windows NT because their most pressing concern is an application server.

NetWare is tops for file and print, but NT is a better applications server

"To get NetWare to adequately perform as an application server, businesses typically have to spend 25% to 30% more than they would to achieve the same results with NT Server," he said.

The Brainshare agenda will include the following:

- The availability of NDS on Windows NT and Unix in the second half of this year.
- Wolf Mountain clustering for NetWare, which is Novell's response to Microsoft's Wolf Pack clustering capability. The product can link up to four servers for greater network reliability.

According to Brainshare documents at Novell's Web site, Wolf Mountain will offer users a clustered Java environment, a 64-bit unified file system and communications links that use IPX/SPX, TCP/IP and Asynchronous Transfer Mode.

- The next version of IntranetWare, code-named Moab, is due later this year. It will incorporate Wolf Mountain clustering and full memory protection.
- Native TCP/IP support for NetWare.

Novell CEO post still open

Mum's still the word from Novell on its six-month search for a CEO to replace Robert Frankenberg, who left last September.

A Novell spokesman said the Orem, Utah, firm is "making progress" in its search. "The CEO search is a top priority. We hope to make an announcement soon," he said. He declined to say who is on the shortlist of candidates.

The spokesman also responded to the question about whether Novell President Joe Marengi will stay after a CEO is named.

"Joe Marengi continues to very aggressively and visibly lead Novell. He has not publicly stated his plans after the new CEO is in place," the spokesman said. — Laura DiDio

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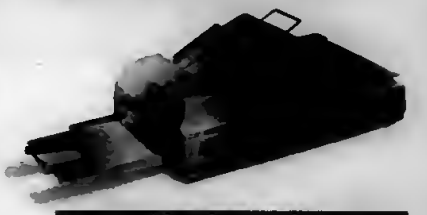

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IBM boosts access to System 390s

By Bob Wallace

IBM THIS WEEK will announce product enhancements to let information systems managers provide easier, faster and less-expensive access to System 390 mainframes, *Computerworld* has learned.

The company will announce improvements to its 3746 Nways Controller that will keep users with a mix of SNA and IP traffic from having to buy and manage separate gateways to their 390s, sources close to IBM said.

Also, IBM will soon ship the 2216 Nways Multiaccess Controller for users with IP corporate networks. It is more powerful than its 3172 predecessor and supports faster pipes to 390s.

And because SNA networks can include multiple far-flung sites linked to data centers, IBM has equipped the 2216 to support 56 T1 lines, up from 20 supported in older 3746 models, sources said.

PUTTING ON A BLITZ

IBM's networking rollout will include:

- 155 Mbit/sec. SONET Super Hub
- Industrial-strength ATM switch
- High-density Ethernet switch
- New FRAD models
- Several management packages

BATTLE WITH CISCO

Analysts said users are the winners in the increasingly fierce competition between incumbent IBM and underdog Cisco Systems, Inc. for control of the data center.

"Cisco has definitely made IBM a much better competitor, and we're seeing that with Big Blue reducing the cost of accessing 390s and better supporting IP," said Cindy Borovick, an analyst at International Data Corp. in Framingham, Mass.

"This certainly won't stop Cisco in its tracks, primarily because it owns the IP network market," Borovick said.

The Escon adapters for the 3746 and 2216 support IBM's Multipath Channel+, a protocol that better manages connections to Systems 390s and reduces cycles by up to 60%.

The wide-area network ports for the 2216 are reportedly far less expensive than those supported on the older 3746 models because they are PowerPC- and Peripheral Component Interconnect-based. The 2216 also will have Asynchronous Transfer Mode and Integrated Services Digital Network interfaces.

IBM's mainframe connection strategy is based on a variety of multifunction access products; Cisco's approach is based on installing software add-ons to its high-end routers.

Platinum tackles security, year 2000

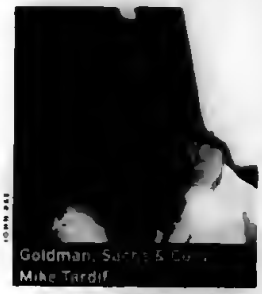
▸ *Single sign-on function to ease access burden*

By Patrick Dryden

PLATINUM Technology, Inc. marks its 10th anniversary this month with a major push to integrate its product line as it seeks to become a single source of management software and services.

Also, the Oakbrook Terrace, Ill., company this week is adding security and year 2000 products.

Platinum is boosting its security lineup with a sign-on tool that lets users log in once to reach diverse systems. That helps information systems departments control overall access.



JOHN ROS

"We need mainframe security in a client/server environment"

"We believe in single sign-on for security control," said Mike Tardif, vice president of enterprise technology for operations and systems management at Goldman, Sachs & Co. in New York. "It forces us to understand where users must go and what they must access."

Platinum also wants to take on year 2000 date conversion tasks through tools and consulting designed for more than an immediate fix.

SMALLER BITES

Platinum plans in June to recast its systems management products as a modular suite. That will allow IS managers to address a range of problems one step at a time instead of having to swallow a complete suite, such as Unicenter TNG from Computer Associates International, Inc. in Islandia, N.Y.

"Now we're grouping some of our 140 products logically as bundles," said Marty Reamy, vice president of Platinum's systems management division. "Our integration technology is starting to come to fruition."

Platinum has been adding common services to products it developed or acquired. Uniform features that appear in the tools include the user interface, installation procedure, messaging and event handling.

Tardif said he favors Platinum's approach of supplying built-in integration among the tools he selects to solve various problems. That means operators are familiar with each console, and the tools can share information when the need arises. The alternative is to force users to replace familiar, working products with a new integrated suite.

The value of Platinum's "fleshed-out" security line increases as its tools talk to one another, said Erica Rugullies, an analyst at Hurwitz Group, Inc. in Watertown, Mass.

But Platinum must fill gaps, such as managing firewalls and authorization servers, to complete its security coverage, especially for enabling electronic commerce, Rugullies said.

Platinum is building a fairly complete set of security management tools but isn't unique, said Paul Mason, an analyst at International Data Corp. in Framingham, Mass.

PLATINUM GROWTH

	Revenue	Employees
1987	$340,000	30
1996	$439M	3,800

Platinum had to improve its multiplatform access control, Mason said, to compete with enterprise management suite leaders CA and Tivoli Systems, Inc. in Austin, Texas.

Organizations turning to Platinum as a business partner include housing finance company General Motors Acceptance Corp./Residential Funding Corp. and retailer Toys R Us, Inc.

Officials at these companies said Platinum strove to understand their businesses in order to make information resources a competitive advantage and help IS meet its service commitments.

POWER MANAGEMENT

Microsoft's hot docking still a version away

By Mindy Blodgett and April Jacobs

"HOT DOCKING" — the ability to plug a laptop in to a docking station while the laptop is running — hasn't lived up to Microsoft Corp.'s billing, according to industry observers.

Most Windows 95 laptop users must first turn off the system before docking, a more time-consuming and inconvenient process.

"Microsoft has yet to provide true hot docking for laptops," said Ken Dulaney, an analyst at Gartner Group, Inc. in San Jose, Calif.

The problem is in the power-management schemes Microsoft has built in to its operating systems, which sometimes end up fighting for power with various laptop components and features.

Responding to critics, Microsoft officials said the power-management specification prepared for the next release of Windows, code-named Memphis, will eliminate the problems. Memphis is due in beta this month.

But in the meantime, some "intelligent" power-management schemes can actually cause more problems. For example, the most recent release of Windows 95, the Windows 95 OEM Service Release Version 2 (OSR2), has fought for power with some PC cards and with the BIOS option on some Toshiba America Information Systems, Inc. laptops, according to Microsoft.

Intel Corp.'s ProShare cards and PC cards from 3Com Corp. disabled Windows 95's instruction to shut them off, so they were powered even when they weren't in use. That drained power and caused machines to go to sleep.

Jim Wolfe, mobile division marketing engineer at 3Com in Santa Clara, Calif., said his company has been working with Microsoft on a similar problem with its PC card since it cropped up several months ago.

"We discovered in testing that the OSR2 tried to put the modem to sleep as part of its power-management features," Wolfe said. "So if you happened to be logged on to the network, it would drop you off."

Wolfe said Microsoft is working to fix the problem, but in the meantime, 3Com has tuned the PC cards so they won't be disabled during power management.

Another problem that has cropped up in the Windows 95 OSR2 is that the power-management driver may not handle a suspend request and will cause Toshiba laptops to power off under several conditions, including when the computer is placed in its docking station.

On its World Wide Web page, Microsoft said this symptom has been reported to occur only with Toshiba laptops, including the Toshiba Tecra 710, 720, 730 and 500 series and the Toshiba Portege 650.

Microsoft's Web page tells users to work around this issue by setting the power-up (or resume) mode option to boot mode instead of resume mode.

Repeated attempts to contact Toshiba officials were unsuccessful.

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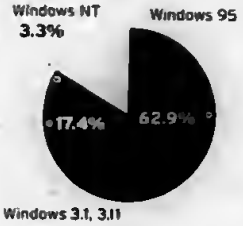

Total 1996 licenses: 75M

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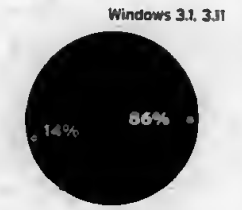

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Merrill goes slow on Web trading

By Robert L. S[illegible]

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EXTRAVAGANT

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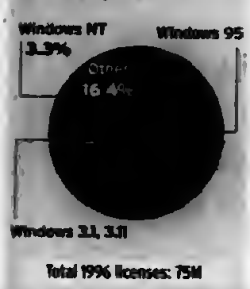

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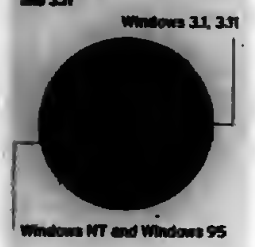

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By Robert L. Scheier

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Win 95, NT push puts 16-bit users in quandary

▸ *Maintaining multiple platforms can burden IS*

By Lisa Picarille

THE RECENT RELEASE of Microsoft Corp.'s Office 97 — which runs only on its 32-bit operating systems — along with indications that the company wants to leave the 16-bit world behind, has left users in a quandary and given new meaning to "cross-platform."

Indecision about a total migration to 32-bit operating systems — Windows 95 and NT — has heightened the spotlight on the hassle of maintaining 16- and 32-bit versions of an application.

Also, "There is a dichotomy between 16- and 32-bit applications that has redefined the term 'cross-platform,'" said Chris Le Tocq, an analyst at Dataquest, a market research firm in San Jose, Calif. "Cross-platform no longer applies only to environments with Windows and Macs or Windows and Unix."

Although administering computing environments with applications that run on multiple iterations of Windows 3.x, Windows 95 and Windows NT isn't new, users say it is becoming increasingly complicated and time-consuming.

Users face file incompatibility among versions, macros that don't work with different releases, new features in the current release that aren't accessible to users of the previous release and support for specific protocols that aren't accessible across software releases.

PAINFUL CONFLICT

"We are painfully aware of the conflicting issues between 16- and 32-bit software," said John Pierce, vice president of information systems at Eagle Pacific Insurance Group, Inc. in Seattle. He said his company is sticking with 16-bit software for now. "We can't mix driver sets. We are having problems with [Open Database Connectivity] support. It is simpler and faster for us to just stick with the one approach as long as it meets our current needs," Pierce said.

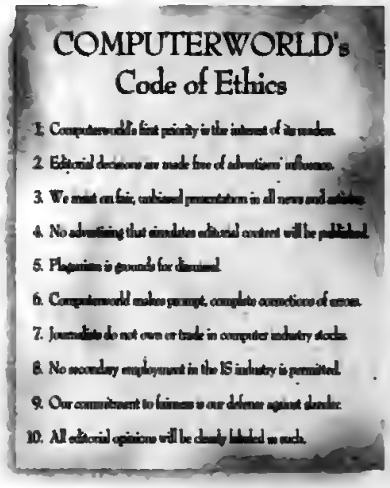
Office 97 isn't the only example of software that is being upgraded with just Windows 95 and NT users in mind. But Office is one of the most prominent examples because it still has a huge 16-bit user base and status as the de facto productivity suite for businesses.

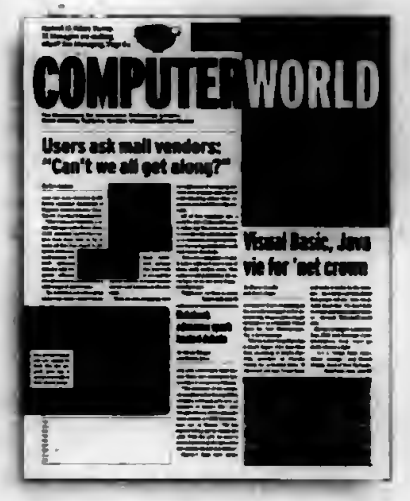
"This is hardly a no-brainer software upgrade," said a user at a large West Coast manufacturing operation who asked not to be identified. "Even if you already have Windows 95 and are running Office 95, you must decide if the new features in Office 97 are compelling enough to justify the upgrade. Then if you do upgrade, you'll have Office 95 documents that are not compatible with Office 97. Then you need to download a temporary file format fix from Microsoft."

Users are coping in myriad ways. Some are creating workaround strategies for coexistence in their mixed environment. Some are considering the use of applications written in Java that can be deployed regardless of the operating system. And some users — figuring that they should consider all options when weighing a move to 32-bit — said they like the possibility of moving to network computers.

And then there are those who see a clean break as the easiest route. For them, the hassles of managing 16- and 32-bit versions of applications drove the migration to a single platform.

"It was mostly the amount of work necessary to administer two entirely different systems," said Gary Creek, a computer consultant at Texaco, Inc. in Bakersfield, Calif. That site only two weeks ago completed a yearlong migration of its 250 users from Windows 3.11 to Windows 95. "There is no convenient way to handle these problems. Already we are looking at the move to Windows 97 to solve some issues."





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The Mac OS Report. One in a Series.

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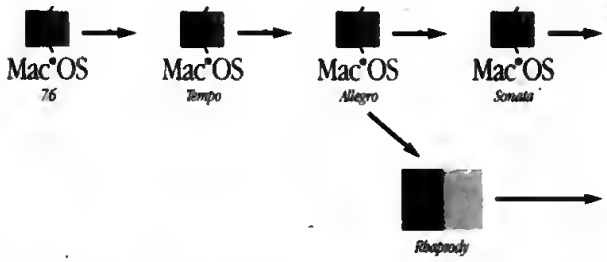

Apple's complementary operating systems – Mac OS and Rhapsody – allow you to choose the system that best meets your needs. They also allow you to decide when it's time to make the transition.

setup, personal web sharing and built-in Java. And it will help you be more organized, by reducing on-screen clutter with spring-loaded folders and pop-up windows for frequently used items.

Of course, Tempo also paves the way for further updates to the Mac OS. Because there's much more to come.

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Merging NeXT and the Mac OS will create a next-generation OS that will give our competitors something new to catch up to. It will be an OS that helps developers create breakthrough applications by allowing greater experimentation and efficient reuse of code. It will include the best of our graphics technologies, such as ColorSync and QuickDraw GX. And we plan to adopt the Adobe PostScript imaging model as well. It will fully support the QuickTime Media Layer. It will provide industrial-strength reliability, performance and ease of use. And it will be an ideal platform for publishing, multimedia and Internet applications yet to come.

What is the name of this new OS? Its code name is Rhapsody.

It will be an Apple thing.

Rhapsody will leave other operating systems in the dust. But not Apple customers. To start with, Rhapsody will enhance the general look and feel of today's Mac OS interface. It will support all currently shipping Mac OS-based systems. It will run the vast majority of existing Mac OS applications by hosting the complete Mac OS on the Rhapsody kernel.

In short, Rhapsody will run your existing applications and utilities, read your files, recognize your current fonts and extensions and play your movies and sounds. Rhapsody will deliver the kind of technology you expect from Apple. The kind of technology that appeals to anyone who requires the highest performance for publishing, Internet and multimedia authoring, and scientific and technical work. The kind of technology that appeals to people who like to, well, get things done.

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What does all this mean? It means you can do everything you're used to doing now, plus a few things you might not yet imagine. It means you can buy a Mac today and not worry about its compatibility with Rhapsody tomorrow. It means Rhapsody won't just be a new way to use a *Macintosh* – it will define an entirely new way to use *computers*. You can learn more by visiting us at www.macos.apple.com or by calling 800-538-9696 for information by fax.

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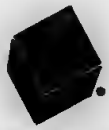

The acquisition of NeXT provides Apple with additional strengths in performance, reliability, network management and rapid application development.

Mac OS 7.6 extends Apple's leadership in graphics and multimedia by bringing together the latest versions of Apple QuickTime technologies, collectively known as the QuickTime Media Layer.

Adobe PostScript

Apple intends to adopt the Adobe PostScript imaging model for Rhapsody and transfer the best of our existing graphic technologies, including ColorSync and QuickDraw GX.

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Share sounds alarm on year 2000 fix

By Tim Ouellette
SAN FRANCISCO

ATTENDEES AT SHARE'S biannual meeting were urged by speakers to make it clear to their software vendors that they must be on top of the year 2000 issue. The meeting for the IBM mainframe user group was held here last week.

Addressing the year 2000 date change is becoming more urgent for the approximately 2,500 attendees, most of whom are from mainframe shops.

That is because their systems house runs the most mission-critical applications and data.

"We can't complete our parts until vendors are done with their parts," said John Nolan, manager of technical support at Cleveland State University (CSU) in Ohio.

"We have to challenge our vendors and tell them how we use their product and what we need from them to finish the job," Nolan said.

Nolan and other presenters said users have to be proactive because some vendors don't understand the issues that surround date formats. And other vendors just try to sell year 2000 services rather than fix their own products.

For example, the Bank of Montreal's year 2000 project includes one person whose only duty is to track vendor applications for year 2000 compliance.

Out of 105 non-IBM products in use at the bank, more than half aren't ready for the millennial date change.

Half the vendors of those products haven't acknowledged information sent by the bank (see chart).

Nolan, who has tracked vendor practices in this area while working on CSU's year 2000 efforts, suggested users do the following when dealing with vendors:

- Keep maintenance agreements until after 2000 so the vendor must deal with failures.
- Send each vendor a detailed letter that requests information on how and when its products will be ready for 2000.
- Get specific vendor documentation that details how the vendor's products will best work with the year 2000 date change and other products' formats.

The Bank of Montreal wants half its in-house systems to be year 2000-compliant this year, but it has set a higher goal for its mainframe applications.

MAINFRAME GOALS

"In the MVS [mainframe] world, we want 90% of our year 2000 efforts completed this year, assuming we get product updates from our vendors," said Malcolm Sanderson, a year 2000 project manager at the bank and a Share officer for enterprise technology management issues.

Share attendees, most of whom are familiar with IBM practices, gave Big Blue good grades for its efforts in year 2000 compliance.

The most recent versions of IBM's operating systems can handle a four-digit date format to simplify year data.

And the company now specially codes any product update with year 2000 changes so that users can easily identify and track those changes and act accordingly.

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Analyst: Marketing should lead Web teams

By Mitch Wagner
SAN FRANCISCO

MARKETING DEPARTMENTS, rather than information systems shops, should run electronic-commerce projects to ensure that business values take priority over technology, said an analyst at Forrester Research, Inc.

William Bluestein, group director of new-media research at Forrester in Cambridge, Mass., dished out his advice last week at the "Making Money on the Internet" seminar at the ANA Hotel here.

Companies that want to go online should set up separate business units for Internet commerce, headed by someone with at least 10 years of experience on the business side of the house, Bluestein said. The department should be staffed with 20 to 30 people from information technology, advertising and sales, he added.

The group would be responsible for coordinating efforts among internal departments, technology companies and customers, Bluestein said.

Marketing departments are best suited to head electronic-commerce projects because they are closest to the customer and best know the company's overall business strategy, he said. IS departments are prone to falling in love with flashy technology, he added.

IS manager Janey Place, group executive for strategic technology at NationsBank Corp. in Charlotte, N.C., disagreed with Bluestein.

She said both IS and marketing managers need to keep an eye on business value. Marketers are no better qualified for that than IS managers, she said.

"I think we all make a big mistake when we put people in categories," Place said.

Steve Dieringer, a marketing vice president at Banc One Corp. in Columbus, Ohio, said both marketing and IS have a role to play in electronic commerce.

"IS has been schooled in driving down costs, not in driving customer demand," he said. Dieringer, who didn't attend the conference but was later interviewed by *Computerworld*, helps manage Banc One's electronic-commerce efforts.

Bluestein acknowledged IS has a major role to play in planning World Wide Web sites. Only IS managers can test out vendor claims for product performance, he said.

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Software to convert applications to Web without changing code

By Mitch Wagner

CENTURA SOFTWARE CORP. last week introduced server software designed to let users run client/server applications on the Web without modifying the applications.

The Menlo Park, Calif., company's ForeSite 2.0 server was designed to sit between a client/server application and a World Wide Web server. It passes information requests from the Web to the application and then passes the resulting data back to the Web browser.

ForeSite works with existing client/server application programming interfaces rather than requiring alterations to the program. That makes it easier to put client/server applications on the Web, said user Al Romo, a senior systems analyst at U-Haul International, Inc. in Phoenix.

ForeSite competes with several products that connect client/server and mainframe applications to the Internet. Other products require modification to the client/server code or were designed to build client/server applications for the Internet from the ground up, analysts said.

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Employers seek plug for IS brain drain

CONTINUED FROM PAGE 1

At Prudential Insurance Company of America, for example, IS employees who attend a seven-week Windows NT training course must sign a contract to stay on for at least a year or pay back the $10,000 training bill. After six months, the payback drops to 50% of costs.

"We're looking for these folks to be the backbone of a new technology group," said Rich Delli Sante, Prudential's IS training director, explaining the get-tough defensive move.

Employers argue that stay-on contracts are necessary to recoup a return on the millions of dollars they invest in training each year. The contracts have stood up in court if the employee can choose whether to accept the training, said one intellectual property lawyer. If the training and the stay-on contract are a condition of employment, the employee can claim the contract was invalid because he was coerced into signing it.

Managers need to be careful how they structure training contracts because courts "look restrictively" on the rights of employers to limit their employees future work activities, said M. Peter Adler, an attorney at the Minneapolis law firm of Oppenheimer, Wolff & Donnelly.

HOW TO WRITE A TRAINING CONTRACT

1. Limit its length to 3 to 6 months
2. Keep the payback amount low, around $1,500
3. Make sure employees know they can refuse training

Source: Attorneys M. Peter Adler, Oppenheimer, Wolff & Donnelly, Minneapolis; Bruce Brickman, Manapalan, N.J.

For one thing, the $6 million cost includes the installation of a multimedia lab, training materials, services and individual training for employees, so the exact cost per employee may be difficult to break out.

"My preference is not to put shackles on employees. But I'm also a businessman, and from a practical perspective, we're finding that, more and more, you have to do some of these things," Partridge said.

COURT TEST

The issue of IS employees taking trade secrets with them is being tested in court by Deluxe Data Systems, Inc., which has charged Visa U.S.A., Inc. with stealing trade secrets by hiring seven former Deluxe employees (CW, Feb. 24). A judge last month lifted an order that had blocked the former Deluxe staffers from helping Visa develop debit-card processing software similar to software they helped develop at Deluxe.

Employees are free to take general know-how with them, according to several intellectual property lawyers, but they can't take knowledge of specific products or processes that the former employer has identified as trade secrets.

"Not everything is a trade secret," said attorney Bruce Brickman in Manapalan, N.J. "You have to identify the items, you have to give [employees] a description, you have to publish that description, and then you have to limit access" to the trade secrets, he said (see chart at right).

Brickman advised IS managers to be realistic and realize that training contracts aren't ironclad guarantees. He said managers should view them as a risk-management tool designed to prevent a mass exodus of trained employees.

"I'm not talking about people staying on until retirement and getting a silver watch. But we just put $5.8 million on the table, and we'd want them to think twice" about leaving, Partridge said.

Andy Hafer, technology chief at Hydro Agris North America in Tampa, Fla., recently had one of his IS workers sign a two-year stay-on contract in exchange for training in SAP AG's popular financial applications. The training cost the company about $30,000.

Georgia Pacific's Rick Partridge

"My preference is not to put shackles on employees. But I'm also a businessman."

A downside of contracts, he said, is that "employees feel distrust, so you're creating a little bit of a morale problem before they even get started."

The twist, however, is that increasingly, the new employers, rather than the workers, are paying off training debts.

Partridge said Georgia-Pacific hasn't paid off training debts for any new recruits. "But we have had candidates come in and tell us they're on the hook for so many thousands in training costs," he said.

Jim Kenner, a recruiter at Pencom Systems, Inc. in Reston, Va., said he has clients who have paid off training debts as high as $15,000 to reel in a certified Windows NT professional. Employers also are willing to pay debts for professionals who have object-oriented software development skills, he said.

"When demand is such that you cannot find [technical] personnel, an extra $10,000 to $15,000 is not going to stand in the way," Kenner said.

Other companies have plenty of IS staffers who sign on the dotted line, stay their time and then quit to earn even more than they would have earned had they quit immediately after training.

"It's ironic because you stick around for six months then leave, but you leave with six months of experience," observed Dana Crenshaw, a systems analyst at TRW, Inc. in Atlanta. "That only makes you even more valuable."

TO PROTECT TRADE SECRETS

1. Clearly define your trade secrets
2. Explain that definition to employees
3. Warn employees about penalties for disclosing such information
4. Explain the definition and penalties in employment interviews and repeat them in agreements and exit interviews
5. Create physically secure areas
6. Set a precedent with legal action against violators, even if you don't win the case

Source: Attorneys M. Peter Adler, Oppenheimer, Wolff & Donnelly, Minneapolis; Bruce Brickman, Manapalan, N.J.

NT training comes with some strings

▸NT certification often requires stay-on vows

By Julia King

AMONG THE MANY technical skills that companies are desperate to protect, Windows NT nears the top of the list.

As a result, companies are requiring NT professionals, in particular, to sign stay-on contracts as a condition of training.

At Prudential, managers are so concerned about losing newly trained NT staffers that they have them use fake names when they talk to the press. Otherwise, a competitor could spot their names in print and try to lure them away.

SALARY PREMIUMS

The concern is warranted. By year's end, NT usage is expected to increase by 150%, according to International Data Corp., a market research firm in Framingham, Mass. But already, companies are chasing after Windows NT professionals, paying as much as a 9% salary premium to people with NT skills, according to *Computerworld*'s 1996 skills survey.

"We've run into a lot of managers who have sent people to NT certification [training], and they've come back and resigned to take another job," said Jim Kenner, a recruiter at Pencom Systems, Inc. in Reston, Va.

"Those managers lost the certification money and the employee, so it's a double whammy," he added.

Managers peg the cost of NT certification at about $15,000 per person.

Howard Marks, chief scientist at Networks Are Our Lives, Inc., a networking consultancy in Sherman, Conn., has also seen the phenomenon.

"What normally happens is you take somebody who has a market value of $45,000 a year and send them to training, then all of a sudden, they're worth $60,000 a year. And it's very appealing for them to take the $60,000-a-year job," he said.

As Marks sees it, employers have two options. "Either give them a 30% raise, which isn't going to happen, or build in a training obligation back to the company," he said.

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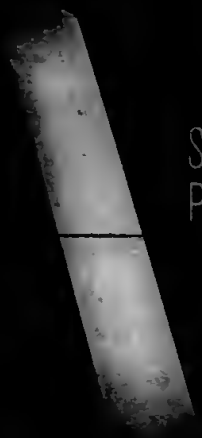

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Computer Industry

Briefs

TELECOMMUNICATIONS

AT&T commits $8B to defend its turf, attack Baby Bells

By Kim Girard

AT&T CORP. PLANS to invest between $8 billion and $9 billion to make a bold plunge into the $90 billion local telephone service market and protect its long-distance turf.

But investors were shaken by last week's news of the company's pricey plan to boost Internet and wireless services and resell local service from the regional Bell operating companies (RBOC).

New AT&T President John Walter, at an unusually forthcoming Wall Street analysts meeting, said short-term profits could suffer. That news sent the company's stock down 3 points per share last Tuesday to 36 7/8, a loss of nearly $5 billion.

"Obviously, they feel they have to spend this money to meet and beat the competition," said Richard Tool, an analyst at Merrill Lynch & Co. in New York. "There will be near-term pain in the way of lower earnings" that may last into next year, he said.

Analysts said AT&T is doing what is required to fight the RBOCs and GTE Corp., a local telephone company that offers long-distance service.

"John Walter is bringing in focus, accountability and setting big goals, and that's the first step to moving this lumbering battle cruiser," said David Goodtree, an analyst at Forrester Research, Inc. in Cambridge, Mass. But Goodtree said Walter could push "a little harder and a little faster."

AT&T said money will be invested in reselling the RBOCs' local services and in the technology required to support Baby Bell customers who switch to an AT&T local service — for example, to provide one telephone bill for both local and long-distance service.

AT&T's strategy is to resell RBOC network capacity at a reduced cost, lure customers and use the revenue to build additional network support.

LOCAL ATTACK

"If you see something move with light-speed, it will be [AT&T] getting into the local market," said Jeffrey Kagan, president of Kagan Telecom Associates in Atlanta.

AT&T already faces stiff long-distance competition from Sprint Corp. and MCI Communications Corp. Smaller firms are chipping away at its base.

The Southern New England Telephone Co. took about a third of AT&T's long-distance customers in Connecticut in two years. "They really bloodied AT&T's nose," Kagan said.

AT&T now must face a host of new competitors. "At a time they're expecting earnings to be turning, RBOCs will be coming in full speed," Tool said.

AT&T also has vowed to cut $2.6 billion in costs during the next two years.

There is no plan to cut beyond the 17,000 employees already slated for elimination over the next three years, management said. AT&T has eliminated 5,800 jobs so far.

AT&T'S TURNAROUND

What the company plans to do to make its comeback

- Cut costs by $2.6 billion over two years
- Invest up to $9 billion to prepare for local competition and improve wireless and Internet services
- Reach target earnings of between $5 and $6 per share within five years.
- Bundle local, long-distance, wireless and Internet access on one bill
- Stop sending $100 checks to lure new long-distance customers; doing so cost AT&T $1 billion last year

Toshiba jumps from laptop to desktop

▸ *Targets corporate users with Equium line*

By Matt Hamblen

TOSHIBA AMERICA Information Systems, Inc. hopes to leverage its No. 1 position in notebook computers into a top-five ranking in commercial desktops.

The Irvine, Calif., company will launch its Equium PCs today. They range from an $1,899 model with a 166-MHz Pentium MMX chip, 32M bytes of RAM and a 2.2G-byte hard drive to a $3,499 model with a 200-MHz Pentium Pro, 32M bytes of RAM and a 4.6G-byte hard drive.

Toshiba's goal is to become one of the top five commercial and consumer PC vendors in the U.S. by year's end, said Michael Wagner, director of desktop marketing at Toshiba.

"I'd wager fairly long odds of that happening," warned analyst Bruce Stephen at International Data Corp. (IDC) in Framingham, Mass.

For Toshiba to crack the top five, "they'd have to take share from major players such as Gateway and HP," Stephen said.

Toshiba's Equium 6200M minitower has a Pentium Pro 200-MHz processor and costs $3,499

Toshiba is the leading U.S. laptop vendor with a 24% market share, based on 1996 estimates from IDC.

Toshiba introduced its first consumer desktop, the Infinia, in the fall.

With the acceptance of Toshiba portables at large companies, information systems managers may be more willing to buy Toshiba desktops, Stephen said. Some corporate buyers may want a single vendor for both desktops and notebooks, he said.

The Equiums come with a year of free on-site service. They have a feature that lets LAN administrators distribute software and conduct inventory and status reviews, analysts said.

All models will include 10/100M bit/sec. Ethernet ports, CD-ROM drives and three-dimensional graphics acceleration that produces full-motion video at 30 frame/sec.

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3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems

(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Dev.Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No
Intranet Products ❑ Yes ❑ No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)

(a) ❑ Internet software
(b) ❑ Internet browsers
(c) ❑ Web authoring/development tools

5. Do you use the Internet?
❑ Yes ❑ No

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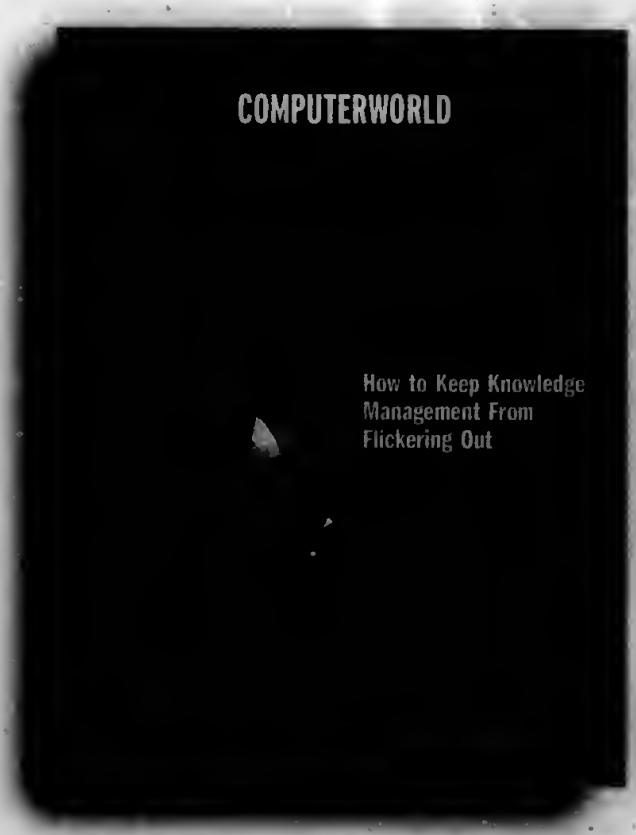

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Coming in the March 17th issue of Computerworld...

Turning Data into Knowledge: How to Channel and Manage Information Across the Organization

Too many goals, too much information, and unenthusiastic personnel can dim even the smartest company's knowledge management efforts. Ellen Knapp, vice chairman and chief knowledge officer at Coopers & Lybrand L.L.P., shows how to avoid these knowledge management pitfalls through prioritization, picking the best sources of knowledge, and knowledge profiling.

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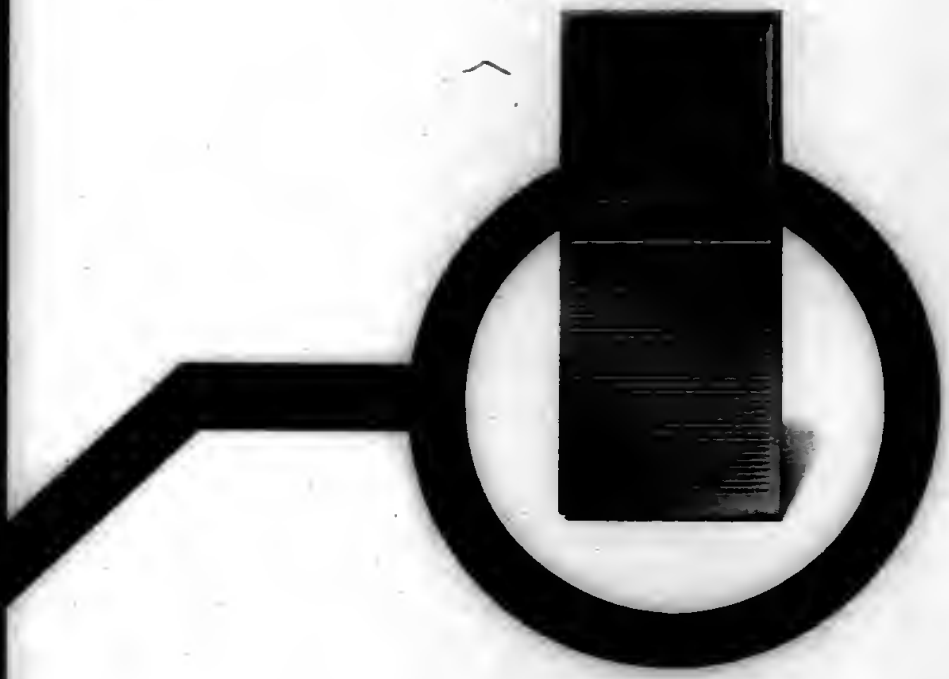

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OPINION

Nobody move If money can't buy you love, can a "stay-on" contract buy you loyalty?

That seems to be the distasteful logic underlying this latest twist in the high-tech skills shortage, as our page 1 story this week illustrates. An increasing number of companies are intent on legally binding their information systems workers to stay on — usually for at least six months — after they've taken company-paid training courses in hot technologies such as Windows NT, Java or SAP.

This creepy concept harkens to the darkest side of management theory, where employees are viewed as self-centered opportunists who can't wait to screw over the company.

Even more jarring is the notion that an employer has intellectual property rights to a human being whose knowledge grew on the job.

Computerworld talked to some IS pros about this subject recently ["Breach of faith," CW, Feb. 24], and they clearly found it insulting and demeaning.

What other boneheaded policies are likely to follow? Our story this week notes how managers at one large insurer "are so concerned about losing newly trained NT staffers that they have them use fake names when they talk to the press. Otherwise, a competitor could spot their names in print and try to lure them away."

Wonderful. We move from lawyers to liars in one graceless leap.

Now, I can see the business logic of trying to hang on to certain investments. Protecting trade secrets via nondisclosure contracts is a sensible and necessary practice, for example.

But strong-arming newly trained IS people only creates the kind of distrust that makes them want to flee. In fact, a recent *Computerworld* survey showed that pay isn't even the top factor in weighing job offers [CW, Feb. 24]. What really mattered? Getting the chance to learn new technologies and having a good boss.

Talk about ironic, huh?

Maryfran Johnson, *executive editor*
Internet: *maryfran_johnson@cw.com*

LETTERS

Flat fee offer isn't all that's wrong at America Online

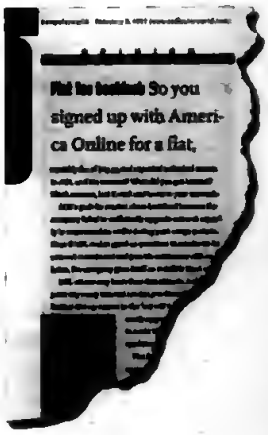
As a follow-up to the opinion piece by Alan Alper in *Computerworld*'s Feb. 3 issue, which referred to our work on usage-based pricing, we can expand on how better pricing can be used to benefit America Online and its customers. As users perceive a congestion problem, there is a tendency to reserve a connection by logging on and maintaining artificial activity using specialized software. Then when actual use is needed, the connection is available.

AOL's reaction is to invest in new modems, which would fall far short of coping with the huge and expanding customer base. Nor would modems meaningfully address the issues of congestion and better customer service in the long term. In these respects, a pricing solution may be of great use combined with any new investments.

For instance, AOL could offer interruptible connection for different lengths of time and possibly during different times of the day. This could separate casual users from those who have an urgent business use. Our work on pricing shows that consumer benefits as well as performance would be substantially enhanced by such differentiation of usage.

Andrew B. Whinston and Dale Stahl
Professors
University of Texas at Austin

Regarding your recent editorial: While this may be AOL's biggest and most visible blunder, it has a well-established reputation for lousy service. That is why many of us have tried AOL and gone on to other Internet service providers. They also have flat fees but haven't experienced a meltdown. Why not do away with flat rates? It depends on whether you want the Internet to grow from a home perspective. I use the 'net, but if my costs go up, I go off-line — simple as that.



AOL has a well established reputation for lousy service

A. Peter Algover
Danville, Calif.

I can't understand how your suggestion for an excise tax on a user who stays on the 'net longer than one hour might affect Internet service providers so that they would have an incentive to improve bandwidth. Rather, it would give an incentive to decrease bandwidth to get each user to use more connect time in pursuit of the same number of bytes.

I wonder how the industry and its users might respond to a rate based on the number of bits received by a user? This might be a truer measure of usage. I also note that www.computerworld.com is not bereft of images and audio files. All of these contribute to the putative problem. Why don't you set an example to the industry by putting up a text-only site?

Louis Russ
East Brunswick, N.J.
lruss@superlink.net

I read Alan Alper's column with mixed feelings. I completely agree that the Internet service provider and online service industry is in for some serious modification. However, it's about time the medium-size to large corporations doing so much of the whining consider becoming their own Internet providers. They should be quite capable of negotiating usage service contracts with the same communication resources that the traditional Internet provider uses.

Many of us conduct a great deal of research on the 'net and reject the idea of penalties for long online usage times. The Web's best attribute is its capability for the dissemination of information.

Doug Kennedy
Anchorage, Alaska
dk3b9@aol.com

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

The Web is crawling with bugs

Gary H. Anthes

What this world needs is more usability testing. I'm not talking about the whole world, actually. I'm talking about the World Wide Web, that wasteland of mediocrity, that showcase of all that a company can do poorly and often does.

When I set out recently to review the Web sites of four car-rental companies for *Computerworld*, I anticipated two difficulties: performance problems on the congested Internet and some difficulty in navigating unfamiliar sites. I was surprised to find performance was usually pretty good and navigation was often remarkably easy.

The dearth of usability testing produces user-hostile Web sites.

What I wasn't prepared for, but found in spades, was an appalling lack of quality. Some of the most basic functions didn't work, period. I found debilitating bugs and user-hostile messages that should have been caught in the end-user testing phase. One company even failed to post its car-rental policy online. In my review, the sites earned grades of F, D (two sites) and B- for customer service (CW, March 3).

Several of the car-reservation services said no car was available for the date, location and type I requested, but they gave no hint of what might be available instead. I was reduced to throwing digital darts.

Another inexcusable failing was the display of cryptic messages, such as, "Unable to process duplicate names — Combine and re-enter — 01/02%."

One message advised that the quoted rate was for an Orlando, Fla., pickup, then went on to confirm a reservation for San Francisco.

Such messages aren't show-stoppers, but they tarnish the quality image corporations try so hard to promote in other domains.

And then there are things that just don't work or that work with unnecessary difficulty. One Web site promised a "site index" but drew a blank page when I clicked on it. Two of the services made me wait until the end of the reservation process to tell me that I made an error. Then they added injury to insult by making me start from the beginning and re-enter even the correct data to fix the error.

INFORMATION SYSTEMS 101

Folks, this isn't rocket science. I sympathize with your struggles to master object-oriented technology, find Java programmers and cut your growing maintenance backlog. Now those are tough problems.

But this is Information Systems 101. You don't put up an application visible to millions of customers without making it minimally presentable and usable.

It's impossible to believe that the developers who put up these Web reservation systems ever asked their friends, family or co-workers to take them for a test run.

Advice to IS managers: If your application is intended for use by mass-market users, let users test it. And test it again. And keep testing it as the environment changes. Sweat the details. Tolerate no defects.

Consider every possible path consumers could take — right or wrong. Make it possible to back up and start over. Offer error messages that gently and humanely help errant users get back on track.

I don't mean to pick on the car-rental companies in particular. Sloppy testing and inattention to detail are rampant all over the 'net.

It has become a cliche to say the Internet hasn't yet come close to meeting its promise for electronic commerce. Inadequate usability testing is surely one of the reasons.

Anthes is Computerworld*'s senior editor, special reports. His Internet address is gary_anthes@cw.com.*

Your intranet is missing something

Michael Schrage

I know the plural of "anecdote" isn't "data." Then again, it's always fun to gather anecdotes that illustrate how organizations exploit the evolving array of network and intranet technologies. You can't help but be captivated by which management practices "go network" and which ones can't get past analog.

My current favorite example — based on a couple dozen organizational anecdotes — is the suggestion box. Remember the suggestion box? Management created a place where suggestions to improve the company's products and processes were solicited and rewarded. The concept fits well with the meta-themes of "empowerment" and "knowledge sharing" currently championed by info-gurus and digital-seers.

Of course, Japanese companies were heralded as exemplars of organizations that tapped the latent creativity of their workers. (But with the Japanese stock market in the toilet, who cares, right?) American companies, acknowledging the "valuable human capital" of their employees, have done a notably poorer job than the Japanese at soliciting ideas from their people, although the Americans have gotten better.

So imagine my surprise when I discovered that barely a handful of companies, large and small, use their intranet and E-mail networks to actively solicit and reward suggestions on how to improve the business. To be sure, those networks are being used to manage the company more efficiently and effectively. But top managers haven't — and only a few of the profit-and-loss managers have — bothered to set up the digital counterpart of a suggestion box on their networks.

Surely, the cost to establish a "suggestion_box@ourcompany.com" is marginal. But only a few companies seem to have done so.

Why? I asked a few chief information officers, and their painfully blunt answers included the following:

- "No one asked."
- "We didn't want suggestions centralized."
- "No one clearly wanted to take responsibility for responding to suggestions on the 'net."

Every organization should have a central intranet suggestion box that posts its employees' ideas for public observation and comment.

Every organization should explicitly use its intranet to solicit insight and input to make itself better.

Of course, there are a few political issues to consider. Should individuals be required to attach their names to their suggestions? Or should they be able to get away with submitting anonymous suggestions?

Putting a virtual suggestion box on the intranet is a simple yet overlooked step.

I believe those questions go a long way toward explaining why so many organizations haven't taken the obvious step of setting up virtual suggestion boxes.

Managing public discourse about a company's tactical and strategic directions isn't a no-brainer. On the contrary, mismanaging that discourse can create more tensions than a thousand suggestions might solve.

The result is that companies decide, "Let's not run the risk."

Then again, the virtual suggestion box is such a simple and straightforward idea that it seems destined to be woven in to the fabric of future intranets. Whether centralized or decentralized, anonymous or attributed, shouldn't the 'net become a medium for corporate self-improvement? Isn't that what empowerment and knowledge-sharing are about?

The logical answer is yes. That so few organizations have taken this simple and obvious step underscores the reality that logic isn't the force that shapes today's infostructures.

Schrage is a research associate at the MIT Media Lab in Cambridge, Mass., and author of No More Teams! *His Internet address is schrage@media.mit.edu.*

There seems to be no limit to what the world demands of you.

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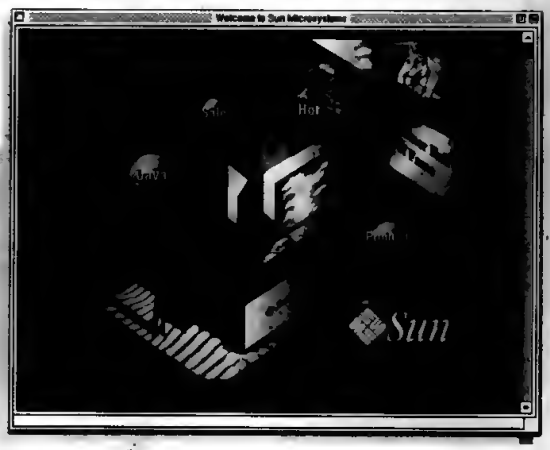

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COMPUTERWORLD

March 10, 1997

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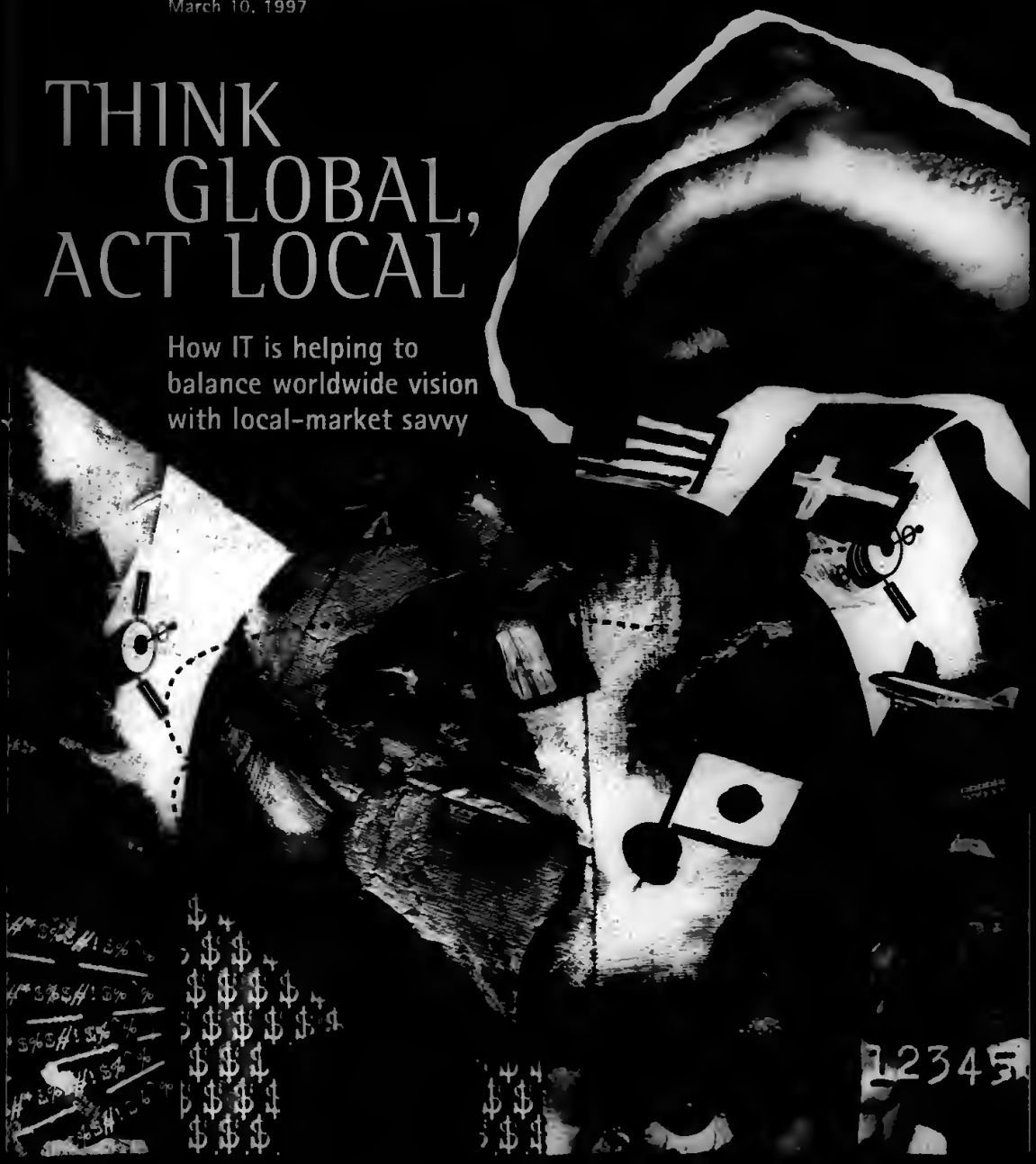
How IT is helping to balance worldwide vision with local-market savvy



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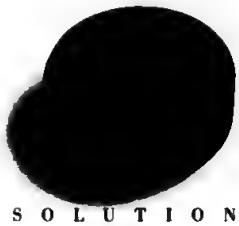

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African-European Network Means Peachy Prospects for Capespan

FRUIT EXPORTER TRACKS $1 BILLION OF PRODUCE FROM AFRICA TO EUROPE

It's hard enough to get home from the grocery store with unbruised apples, oranges and other produce. How would you like to be responsible for safely delivering 83 million cartons — or about three-quarters-of-a-million tons a year — of oranges, plums, apples, mangos and avocados from South Africa to a host of European countries? And make that on time and in good shape.

That is the challenge posed to Gwynne Foster, current manager of information services at Capespan International PLC, based in Farnham Royal, England. The company is jointly owned by two South African fruit exporting companies: citrus exporter Outspan International in Pretoria and deciduous-fruit exporter Unifruco Ltd. in Cape Town. The company reached $825 million in revenue in 1995 and hopes to increase that to $1.5 billion by 2000.

For Foster, managing information systems means finding solutions for marketing, distributing and selling South African fruit to Europe. Her main challenge has been to implement a transcontinental system that ensures Unifruco's Granny Smith apples and Outspan's navel oranges make the trip to Europe safely and on time.

"The situation is becoming more complex and difficult, and we are radically rethinking some of our earlier strategies," she said.

NO BANANAS TODAY

South Africa's recently renewed ability to trade with Europe, along with changing market forces in the produce industry, made it clear to Capespan in the early 1990s that it needed to change the way it moved its product.

"What has happened over the last 10 years is the rise of the supermarket," Foster explained. "When you walk into a supermarket in the UK, every apple has a label on it." Partly because of such branding changes in the fruit indus-

try, "*we* have to be sure the apple is of good quality" rather than the retailer, she said.

Four years ago, Capespan's tracking system indicated how many cartons of each kind of fruit were being shipped, but that was about all the information provided, and most information was gathered manually. When the produce arrived in Europe, last minute business-savvy decisions, such as customer-specific labeling requests or changes in delivery times, were out of the question.

"We had to get a lot closer to the end customer," Foster said.

EASY AS APPLE PIE?

Through IBM Global Network, Capespan linked more than half of its 200 trading partners with a variety of PC-based tracking systems within 18 months. All systems now link back over the network to three online hubs: IBM AS/400s in Capespan and Outspan offices and a Unisys Corp. 2200 at Unifruco offices. Working with IBM Global Services, Capespan launched its new tracking system, which was phased in during 1994 and '95.

In order to collect more information about the exported fruit, a Unix-based tracking system with bar-code readers for radio frequency scanning was implemented in the originating South African ports. The handheld scanners act as terminals that link directly into the Unix host. "From that information, we create a manifest of what is on a vessel and transmit that to Europe," Foster said. Capespan sends the information, including details about the product's inspection, growers, packaging and chemical treatment, to sales offices and receiving ports so sales offices know what will be available for sale, and ports know what they need to off-load.

"Capespan can then do its planning of where to off-load the fruit, feeding that information further down the chain to the marketing offices so they can start allocating product to sales agents," Foster said.

Once the information gets to Europe, Capespan's partners use two different PC systems to track the produce: one for European ports and cold storage facilities and another for sales agents. All the systems link back to Capespan through the IBM Global Network, which is linked directly to Capespan's UK office via 64K bit/sec. digital lines provided by BT.

A BOWL OF CHERRIES

Electronically tracking its products gives Capespan the responsiveness and flexibility it needs in an ever-changing global market.

"We have systems in place from the intake points through the ports and through to the sales agent," Foster said. "If you get that data in right, everyone else in the chain should benefit."

When a boat docks, the port already knows where to send the fruit, whether on to another port or directly into cold storage. Fruit is inspected so that any surprises, such as fruit that ripened too quickly, can be off-loaded and sold immediately. In turn, information about any change in plans — 100 cartons of peaches that won't arrive in Hamburg, Germany — is fed immediately into

Please turn to next page

JUSTIN LEIGHTON

EDITOR'S NOTE

Global Go-getters

Companies in today's global economy are trying in earnest to find the next best place to make their mark, be it in Singapore's increasingly networked society or in the turbulent markets of Latin America.

But most are not content to simply hoist their flag on multiple lands. There are far greater advantages — and, of course, some greater challenges — to establishing yourself as a truly "global" entity. Besides the obvious language and cultural barriers, there's also the difficulty of working with varying network infrastructures, syncing up far-flung business and systems processes and maintaining a consistent IS vision across the entire enterprise.

In our Global Innovators series, Computerworld will explore these unique challenges and the ways in which the brightest companies are solving them. In this issue, you'll read about organizations that have managed to develop a global vision and build on their worldwide strength but at the same time serve the specific needs of local markets. Key to this effort are global information-sharing systems such as intranets; well-coordinated technology efforts that promote standardization; and flexible infrastructures that allow localized systems to meld with centralized databases.

In future issues, you'll read about how companies are dealing with global software support, how they are developing systems that operate on a 7 by 24 basis for all time zones, whether the Internet can really help establish a global presence and more.

Let's face it. The global economy is here. And only the innovators will be ready to take prime advantage of it.

MARY BRANDEL
mary_brandel@cw.com

world

African-European Network Means Peachy Prospects for Capespan

FRUIT EXPORTER TRACKS $1 BILLION OF PRODUCE FROM AFRICA TO EUROPE

BY JEANETTE BORZO

It's hard enough to get home from the grocery store with nubruised apples, oranges and other produce. How would you like to be responsible for safely delivering 83 million cartons — or about three-quarters of a million tons a year — of oranges, plums, apples, mangos and avocados from South Africa to a host of European countries? And make that on time and in good shape.

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TRENDS, ISSUES AND IDEAS FROM AROUND THE GLOBE

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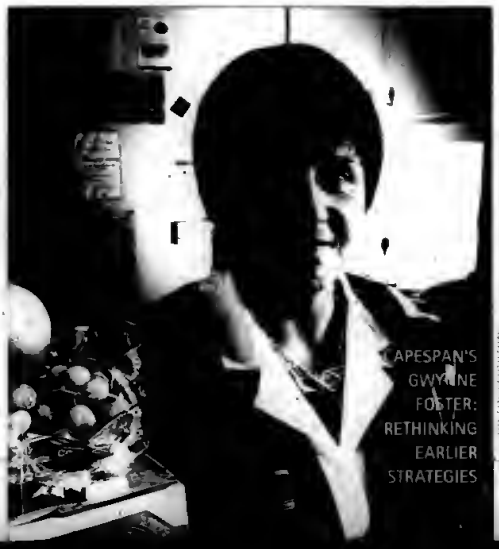

CAPESPAN'S GWYNNE FOSTER: RETHINKING EARLIER STRATEGIES

DAVID CLOUTOUR

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Manufacturers in Australia look to the Web to gain worldwide status

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It's a classic struggle: balancing a unified corporate image with strong local market presence

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Creating a consistent policy is key to ensuring security at international firms

Reaching Out From Down Under

MANUFACTURERS IN AUSTRALIA LOOK TO THE WEB TO GAIN WORLDWIDE STATUS

The "tyranny of distance" is a well-worn phrase for Australian manufacturers. But the geographical distances that have historically isolated Australia from the world's largest trade centers may soon collapse.

In an effort to bring the world "down under," the Australian government is funding a project, now in pilot, to band together manufacturers to conduct trade — first domestic and then international — over the Internet. The hope is to create a "live" goods and services trading floor on which online bidding, buying, selling and marketing can be done over the Internet with a Java-capable browser.

The Australian Chamber of Manufacturers (ACM), the nation's largest multi-industry employer organization for manufacturers, is developing the system with technology from Tampa, Fla.-based Trade'ex, which sells electronic marketplace software.

The project is part of the federal government's "Innovate Australia" initiative, a goal of which is to strengthen Australian businesses' link to the world. "It takes companies that are looking to trade internationally around two years to actually get into the market," said John McCann, national business services manager at the ACM. "That includes initial market research, setting up the supply chain and developing and growing that market. That's a long time for a small or medium-size business without income."

With an Internet presence, though, "companies can attract an increased volume of interest and inquiries, as well as record these responses, so the two-year process can be cut down to only a few months," he said.

When the pilot ends in June, the system will work only domestically. But the ACM hopes to widen its scope to the international market this year.

Here's how it works: A Microsoft Corp. Windows NT server at ACM headquarters runs the Trade'ex Marketplace Server software. It stores information, including product descriptions, pricing and inventory about the manufacturers' products. This server also runs shopping and order modules for buyers, as well as selling and fulfillment modules for sellers.

Using the Market Administrator system, manufacturers can customize their product information over the Internet and can arrange for special promotions or toultitiered pricing arrangements by company or region. A version of the system is now being rebuilt with Sun Microsystems, Inc.'s Java technology, which according to McCann will enable larger manufacturers to tie the system in to their existing systems to facilitate invoicing, payment and account collection.

Registered purchasers can enter the system over the 'net using a secure purchasing "swipe" debit card (being developed in accordance with the ANZ Bank) to select and purchase products directly on-screen.

To date, the pilot has involved about 1,500 manufacturers from various industries, including information technology, telecommunications, office equipment, stationery and printing. So far, the government has infused about $462,600 into the project, with time and

resources invested by the ACM and its partners doubling that figure. The ACM plans to collect a small percent of each sales transaction, McCann said. The organization predicted that by 2001, half of all purchasing transactions in the manufacturing sector will be made online, and it hopes to capture a significant amount of this business.

Pilot participants are enthusiastic, particularly about the real-time aspects of the system. "Current systems can't distribute information to the [distribution] channel fast enough," said Stuart Charlton, managing director of PDS International in Australia, a reseller and distributor of laptop computers.

The system is also better than launching a Web strategy on your own, said Jon Whittaker, logistics manager at Spicers Paper, a Melbourne, Australia-based paper merchant and pilot participant. "It's a far better marketing philosophy than putting out a Web page because our customers are generally manufacturers themselves. And for us, getting set up on Trade'ex was virtually labor-free because Trade'ex has done all the legwork for us," he said.

The system is attracting global interest. "To spread this technology worldwide, we're using a direct, long-standing network of international chambers of manufacturing commerce in cities around the world," McCann said. "Many of them are watching our progress with the pilot and would like to try parallel development of the same market sectors we have nominated here. This will facilitate trading for these manufacturing sectors on a global basis."

BRYAN IS MANUFACTURING EDITOR AT COMPUTERWORLD AUSTRALIA.

Continued from page 5
the information chain.

"You can preadvise and ease the work on the port," Foster said. "The whole thrust of the system is to get information about the product in the chain before the product comes through the chain."

Foster hesitates to quantify financial savings accrued by the system. "A lot of what we have done is fundamental to survival, and we have not yet seen all of the potential benefit of what we've put in place," she said. "But had we not taken dramatic steps, we would not have supported our customers."

With the unification of Europe, Capespan will have new and extensive changes to make to its tracking system. The unification of the common European trading market has meant the emergence of pan-European fruit buyers, requiring renegotiated and new trading agreements for Capespan. As these technology systems accommodate the way business is done, the technology will have to change as business relationships do.

But for Capespan, adapting to a common European market would have been impossible without first installing the current system, Foster said. "The previous view of the world — that we bring in the product en mass to local sales offices — doesn't fit the trading environment moving io to the future," she said. "Ours is not a single system. It's a process — it's a hellishly complex process — but the system is necessary to prosper."

BORZO IS THE IDG NEWS SERVICE BUREAU CHIEF IN PARIS.

Reaching Out From Down Under

MANUFACTURERS IN AUSTRALIA LOOK TO THE WEB TO GAIN WORLDWIDE STATUS

BY LOUISA BRYAN

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INTERNET ATTITUDES

THINK GLOBAL, ACT LOCAL

BY MARY BRANDEL

IT'S A CLASSIC STRUGGLE: BALANCING A UNIFIED CORPORATE IMAGE WITH A STRONG LOCAL-MARKET PRESENCE

The difference between a multinational company and a truly global one is like the difference between a tourist and a world traveler. The latter knows you don't tip bartenders in London, like you do in the U.S. He knows that in Paris, you need a special phone card to make a public phone call and that when dining in Iran, he might be served a sheep's eye as the guest of honor.

But this world traveler would also have universal reserves on which he could draw at any time. He would be indistinguishable from the locals no matter where he traveled, but his reputation and name would be world-renowned.

And that's the classic struggle of a global company: balancing the desire to have a single, recognizable corporate image with meeting individual expectations, market by market. The struggle is both cultural and technological in nature. "No one has the perfect answer to using business systems to support that requirement," said John Parkinson, a partner in the Center for Business Transformation at Ernst & Young in Las Colinas, Texas.

But lots of companies are trying. Take London's Guinness PLC, which operates in 140 countries and sells its namesake beer throughout the world. Being a vendor of intoxicating liquor, it has to be sensitive to local customs and must strike a balance between central control and letting overseas operations apply their local knowledge.

According to Mike Payne, information technology director of Guinness Publishing, the global network that connects the entire company is the means for making that happen. Respondents to a recent *Computerworld* survey seem to agree. Of 47 global companies, 35 said they have a global communications network. Of the 12 that do not, nine said they plan to build one in the next 18 months.

At Guinness, the network not only enables electronic mail for the entire company but also promotes a greater level of consistency, Payne said. For instance, the companywide intranet, under development now, will help smooth the relationship between local marketing groups and the central marketing department.

"There is certainly a level of dynamic tension between the central marketing department and in-market marketing," he said. "Central marketing is responsible for the global marketing of the premium products, and locally the companies will want to push what they know will sell well." As a result, "the local companies have tended to do their own thing in the past with regard to local merchandising, some of which has caused a few shocks back at the center."

Because the intranet will enable merchandising material to be distributed more easily, "they will be able

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MAY AFFECT THE QUALITY OF

to take [the data] and maybe tweak it a bit, but it will be based on something that has been agreed at the center," Payne said.

But building the intranet is only half the battle. The real challenge is to rally everyone in the company to become a regular content provider. BHP, a global resources company in Australia, faced this problem when it built its intranet in order to share business contacts around the world. The company operates across a diverse set of businesses, including steel, petroleum, services, minerals and copper, with operations in 59 countries.

The problem was, people tended to feel their data was proprietary, said Gus Ferguson, BHP's chief technologist. To tackle the problem, BHP called on its information systems council, made up of corporate IS executives, group-level IS executives and the head of BHP's IT group, which decided on a single, companywide infrastructure with a limited number of outside gateways. Groups, divisions and regions were forbidden to establish a parallel infrastructure or introduce new gateways.

Councils such as BHP's are often established at global companies that decide to build a worldwide IS infrastructure — something an increasing number of successful companies, including Toshiba Corp., Xerox Corp. and DHL Worldwide Express, are doing (see stories pages 12 to 14). Toshiba claims to have built a PC components subsidiary in half the time as in the past, in part by following a standard IT architecture. And the trend is growing: In *Computerworld*'s survey, respondents were almost evenly split between those who do and those who do not have a global information architecture.

Companies that have built a global IS architecture have also found it's best to standardize on core business systems worldwide. This enables business units to share information and gives the corporation a global view into what's selling best in which regions and who its customers are.

The difficulty, however, lies in deciding which systems get standardized, which can be determined at a local level and how to enable changes to those decisions over time. "Doing this well has to do with building a culture that's willing to use standards and common capabilities as much as possible but understands that they need to try things out on an individual basis and share what they learn," Parkinson said.

A classic way to achieve this culture, he said, is to put IS people in the individual markets to familiarize them with the localization issues. "This allows them to build more flexible core systems that are easier to integrate with," he said. DHL, with its messaging-based distributed architecture, is a perfect example of this (see story page 13).

Strict enforcement of these standards is often necessary. At Solvay S.A., a $321 million international petrochemicals manufacturer headquartered in Belgium, a move to standardize on the likes of SAP AG's R/3 and Microsoft Corp.'s Exchange has met with some resistance from outside headquarters. Five years ago, IS decisions were still made at a national level, with each country choosing its own system — a setup that echoed how Solvay went about most of its business. But then the company decided it was time to take a global view and implement product, marketing, sales and distribution strategies at an international level.

"There have been some cultural problems. Each subsidiary wants to find its own answer. They don't always like decisions that come from little Belgium," said Didier Boschmans, IS adviser at the company.

Solvay has come up with some innovative strategies to solve this problem. For instance, the IS department will help out any staffers grappling with software problems, but if employees are not using the standard setup, they are billed extra for IS time.

Quick thinking like this, in addition to tough determination and close cooperation, is what distinguishes global innovators from mere multinationals.

The following writers contributed to this report: Philip Sims, news editor at ComputerWorld Australia; Ron Condon, a freelance writer in London; and Joanne Taaffe, a correspondent in the Paris bureau of the IDG News Service.

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cover story

XEROX CORP.

A WORLDWIDE SYSTEM DELIVERS SERVICE THAT'S ANYTHING BUT CARBON-COPY

BY CHRIS STAITI

The Xerox repairman isn't as lonely as the Maytag repairman. He shows up even when nothing is broken.

The most visible member of Team Xerox appears faithfully in offices all over the world to service the company's line of document processing equipment. The Xerox rep, so recognizable you might think he was a carbon copy, represents not one but three entities: Xerox Corp. itself in the Western Hemisphere; Rank Xerox Ltd. in Europe, Africa, the Middle East and parts of Asia; and Fuji Xerox Co. in the Pacific Rim.

Dispersed as it is, Team Xerox presents such a unified front that it has swept every major quality commendation from the Malcolm Baldrige Award to the Deming Prize.

"Our service is not consistent," said Chuck Ray, vice president of customer service delivery at Xerox. Rather, "it is the level of service to the customer that is consistent."

There's a big difference. If you want to meet the needs of users in different economies, cultures and business climates, you can't pound the customer into your service plan, he said. "We attempt to put an overall strategy together and then tailor it to a local area."

Behind that effort is an IS strategy that mirrors Xerox's goal of putting customers first. "The technology and infrastructure that we take for granted in the U.S. is not supported all over the world," said Pat Wallington, chief information officer. "When we want a copier in the U.S., we want color and double-sided printing. In some places, such as third-world countries, they don't have the infrastructure or the networks robust enough to handle that."

HEADQUARTERS	Stamford, Conn.
GLOBAL PRESENCE	More than 130 countries
TOTAL NUMBER OF COMPANY EMPLOYEES	86,700
TOTAL NUMBER OF IS EMPLOYEES	750 internal; 2,000 from EDS
1996 COMPANY REVENUE	$17.4B

Those variances also affect how Xerox offers service, she said. In the U.S., the company uses the phone or online help to troubleshoot problems. But in South America, she said, telecommunications is more expensive than labor. Because customers don't have easy access to phone lines, Xerox keeps the service centers open.

SHONNA VALESKA

That's just the start of the tailoring going on in Xerox's IS strategy. Wallington is wrapping up a two-year systems overhaul that was designed to improve service to worldwide customers. Xerox had been using a proprietary, integrated system called GlobalView, also sold commercially. But while the mainframe-based system was integrated with Xerox's worldwide work processes, it was a closed architecture. "We could communicate very well among ourselves but not with the outside world," she said. "And they couldn't communicate with us."

Furthermore, it was difficult to build interfaces between GlobalView and mobile computing products, which would make it easier to serve remote customers.

Maintaining a focus on the needs of worldwide employees and customers while planning a total systems change and maintaining a large computer system is a tall order. So in 1995, Xerox outsourced a majority of its IS department to Electronic Data Systems Corp. It handles global strategic decisions, such as architecture and new applications development, internally.

At year's end, the transition was 96% complete and the system running at 700 sites worldwide. Wallington called it a "typical client/server system that features industry-standard Windows-based software."

As a result, worldwide customer service reps can better serve remote regions. "Now they can hook the laptop right up to the machine and run diagnostic data right into the laptop," Ray said. Diagnostic software runs an analysis and recommends corrective action.

Today, Xerox can service customers wherever they land. "Sometimes we'll get calls from someone at sea looking for support," Ray said. "So the next time they steam into a port, whether in Vietnam or Italy, we'll get someone over there to help them out."

Staiti is a freelance writer in Somerville, Mass.

DHL WORLDWIDE EXPRESS

GLOBAL SHIPPER IS READY FOR WORLD'S SPECIAL DELIVERY NEEDS

BY ANNA FOLEY

Striking the balance between providing core systems that offer a global view of his company and still catering to varying local needs is an issue that is always foremost for Nigel Green, Hong Kong-based information technology planning manager for DHL Worldwide Express Asia-Pacific.

"The whole ethos of our company is to think globally and act locally," he said. "While we offer global services, we are perceived as locally integrated into the community of each country, and our IT systems need to reflect that."

If, for instance, Japanese customs requires more shipment information than most countries do, DHL provides it. If Japanese customers want to see Japanese characters on-screen, then that's what they get.

DHL tackles the problem by adopting what Green termed a "deep fat" applications infrastructure. "We provide core applications services, accessible to all, which sit on top of a messaging and communications infrastructure," he said. The core services include customer shipment, transit time and billing details. That is the global part of the model.

To cater to local needs, however, DHL has also defined standards allowing developers in individual countries to develop their own applications and link them to the core services using common application programming interfaces, even enabling them to modify their view of the core systems with local-language facilities.

"The idea is that everything is built centrally but has as many hooks as possible for linking in local systems," Green said. "And the core services are highly parameterized, making the business rules easy to tune for different environments."

HEADQUARTERS	Brussels
GLOBAL PRESENCE	More than 80,000 cities in 220 countries
TOTAL NUMBER OF COMPANY EMPLOYEES	More than 40,000
TOTAL NUMBER OF IS EMPLOYEES	1,500
1996 COMPANY REVENUE	Private company

This parameterization is achieved by designing both a flexible back-end environment and a presentation layer, Green explained. "All parameters aren't necessarily included in the first version of a service. We often add more, following feedback from the various countries."

An example is DHL's global shipment database. Certain countries may wish to add extra shipment checkpoints to the system because of more stringent regulations. In those cases, users can input their unique checkpoint data — data other countries won't see — into the common global database.

The global database actually consists of three Informix Corp. databases held on servers in Singapore, Burlingame, Calif., and Brussels. Shipment messages are transmitted among 400-plus Hewlett-Packard Co. servers around the world. All systems are linked on DHL's worldwide network, DHLnet, built on a TCP/IP over frame-relay architecture. Operations in all 220+ countries have access to this network, which also carries corporate electronic mail and intranet traffic.

Green and his colleagues are also faced with the daunting task of encouraging all local operations to abide by a standard set of IT and business rules. These rules govern activities such as storing shipment information to the global database rather than a locally defined database or capturing and transmitting data in a timely manner.

"All we can do is make those rules as attractive as possible so that they have something to offer everybody," Green said. For instance, countries are given a ready-made interface so data can be uploaded to the common database in ASCII text. Also, DHL publishes an internal report analyzing timeliness of data submissions, "so noncompliance becomes very visible, creating a sense of healthy competition," he said.

Probably the biggest challenge for DHL's IS management lies in just trying to communicate concepts and standards around the globe, Green noted. "We are hoping that intranets and online conferencing will help in that area," he said. The company is already publishing IT standards on Web pages, "and that's making a difference."

Foley is associate editor at Computerworld Hong Kong.

JOHN STANMEYER

TOSHIBA CORP.

FROM TOASTERS TO DRAMs, THIS GLOBAL SYSTEM FITS ALL

BY ROB GUTH

How has Toshiba Corp. risen to become the world's No. 1 notebook computer maker? By keeping things simple.

Pick up a battleship-gray Toshiba Tecra notebook in Tokyo's Akihabara electronics bazaar and you'll find that, except for the Japanese keyboard and software, it's the same Toshiba as the one on the shelves of CompUSA's shop on New York's Fifth Avenue.

The company has practiced for years what many of its competitors are discovering only now: Success in the cutthroat PC business depends on spreading costs over a large volume of machines based on standard parts.

That philosophy is now guiding the reorganization of Toshiba's worldwide information infrastructure. "We believe that a global business needs a global IS system," said Kyosuke Tsuruta, senior manager at Toshiba's IS Architecture Group. "Rather than trying to adapt the IS structure to different [local] requirements, we chose to develop a global IS architecture." Why? "Group companies need a common foundation to share business processes and information with other" partners, he said.

HEADQUARTERS	Tokyo
GLOBAL PRESENCE	Over 630 affiliates and subsidiaries in nearly 40 countries
TOTAL NUMBER OF COMPANY EMPLOYEES	186,000
1996 COMPANY REVENUE	$488 (U.S. dollars)

But for a company Toshiba's size, building such a system is no small task. As many of its products are tailored to local tastes and regulations, it must manufacture them close to where they will be sold. But tracking Toshiba's products is like watching a stock ticker: One day the firm might open a new elevator subsidiary in Shanghai, and the next it might sign a deal to supply Cairo with a new metro line system.

As a result, two years ago the company's top management decreed that the IS infrastructure should address three key issues: agility, globalization and productivity. The IS department designed a system that would offer a standard architecture to all of its key overseas subsidiaries — about 100 companies.

The infrastructure consists of a global TCP/IP-based network running over frame relay. Each worker is equipped with Notes, a number of Microsoft Corp. applications and a choice of Netscape Communications Corp.'s Navigator or Microsoft's Internet Explorer. Localized versions of Oracle Corp.'s applications will handle mission-critical functions such as manufacturing, distribution and finance.

"The architecture helps the global company make quicker decisions and respond with speed to rapidly changing markets," Tsuruta said.

Toshiba had a chance to try out that new architecture when it built a Philippines subsidiary for PC component manufacturing two years ago. It brought the subsidiary from idea to operation in about half the time as in the past.

When all the sites are online in a couple years, Toshiba hopes to cut lead times and inventory to one-third of the present levels.

Toshiba is also implementing a system in May to help it manage worldwide semiconductor demand. DRAMs, the cornerstone of Toshiba's chip business, are standard around the world, but they undergo unexpected changes in demand from PC makers. Thanks to the new system, the Tokyo division will be able to feed daily sales forecasts from domestic and overseas branches to its manufacturing facilities, where the data is used to forecast production needs, said Toshinari Satō, manager of semiconductor marketing and sales planning.

One of the keys Toshiba thinks will help tie its corporate operations to its global units is a data warehouse. When complete, the warehouse will provide detailed breakdowns of the entire company's products, parts and prices, as well as sales and planning information. And the warehouse will act as a centralized repository for an equally broad range of data, such as local market demand and pricing for products from all of Toshiba's local units, Tsuruta said.

But while these concepts look great on paper, the devil is in the details. For instance, a massive effort is needed to actually produce the guidelines and instructions on how to install Microsoft Word, Tsuruta said.

The IS Architecture Group needed to create documents that would be free of the misunderstandings arising from cultural and linguistic differences, Tsuruta said. "People in a different culture may feel uncomfortable if they are given very Japanese architectural guidelines," he said.

Guth is an IDG News Service correspondent in Tokyo.

TOM WAGNER

GLOBA
SECURITY

AVOIDING A BREAKDOWN

CREATING A CONSISTENT POLICY ACROSS THE BOARD IS KEY TO ENSURING SECURITY AT INTERNATIONAL FIRMS

W

in December 19

GLOBA
SECURITY

OUTLAW

The politics of encryption technology can be a headache for companies trying to provide secure electronic-mail software for their globe-trotting executives. For executives at Telstra Corp., it has led to a rather bizarre choice: to erase software from their laptops at U.S. airports or risk a breach of customs regulations.

Telstra, an Australian telecommunications provider, sought and won permission from the Australian government for its executives to carry in-house-built E-mail encryption software on trips overseas. If a trip includes a U.S. stopover, however, the travelers have to delete the software from their hard drives before returning home. Otherwise, they run the danger of contravening U.S. laws banning the export of encryption technology using keys longer than 56 bits if the government does not hold an encryption key.

To remove that risk, Telstra has submitted an application [illegible] U.S. [illegible] license for the software, a spokesman said. But the same dangers lie in wait for any foreign businessmen traveling to Australia with similar software. That's because, under Australia's Customs Act, they are breaking the law if they still have the software on their laptops when they leave the country, no matter how large or small its key length.

Australia is moving to drop that regulation from its Customs Act, according to John Rogers, a special adviser at Australia's Defence Signals Directorate. Australia has also opened negotiations with the U.S. government to remove the threat facing Australian travelers, Rogers said.

For business users of encryption technology hampered by restrictive national policies, this is just the type of international cooperation they'd like to see.

Continued from page [illegible]

global companies to consolidate their centers from hundreds worldwide to the double and even single digits.

"There's more emphasis on stronger data centers, and that's going to put more emphasis on international telecommunications structures," said Edward Roche, author of the book Managing Information Technology in Multinational Corporations. "You need to draw up a security plan which addresses global systems and the overall international teleprocessing network. And you need to have certification and rehearsed coordination between the headquarters function and the different domestic operations."

SECURITY STRATEGIES

In support of this coordinated single policy approach, large disaster recovery service providers such as IBM and Comdisco, Inc. recently announced global business recovery services. That means companies can put their entire organization under one umbrella policy rather than contracting on a regional basis.

The most progressive organizations, according to Datapro, are setting up a small central security team at headquarters and appointing a person responsible for security within each business unit around the world. The central team, headed by a corporate security manager, conducts a risk analysis for the entire organization and then selects a methodology to use around the world. "So they've got a central policy, which the local business uses as a baseline, adding whatever else they might want to. That's how they get around the problem of keeping consistent across companies throughout the world," Hyde said.

For instance, European operations might emphasize physical computer security because, according to the Datapro study, that's where computer theft is highest. "It's a very lucrative field at the moment," Hyde said. "Criminals are targeting large organizations, knowing they're deserted in the evenings. People are gaining access just by walking into the building." In the survey, 52% of European companies reported incidents of computer equipment theft in the previous 12 months.

On the other hand, computer theft is less prevalent in Turkey. American-style mug-

GLOBA
SECURITY

OUTLAW

Continued from page 15

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ging is virtually unheard of and burglary extremely rare, according to Ergun Solemez, an information systems consultant to Cenajans/Grey, Turkey's largest advertising agency. One international department store chain boasts a worldwide inventory loss rate averaging 15%, compared with 5% in their Turkish operation.

Notebook computer thefts are also rare. "People are only going to buy a computer here from someone they know personally or from a known company," Solemez said.

A good illustration of a global policy with local controls is found at Telstra Corp., Australia's largest telecommunications company. "We try to work to a collective security model which is adapted to prevailing local conditions and circumstances," said David Harris, general manager for corporate security at the firm, which has operations and joint ventures spanning Asia, Europe and North America. "We have people with skill sets in specialized areas like security who form a centralized resource that can be drawn on, but we also need the experience of the country manager."

Key to this approach is communication between the policy makers and the policy implementers, said John Clark, director of Andersen Consulting's information security practice. "I've seen cases firsthand where companies have a central security group in one country, and they distribute these policies to other countries [that] have not necessarily bought off on those policies," he said.

Another complication: According to Datapro, companies with dedicated security departments are few and far between. Between 1995 and '96, this function decreased 18% in Asia-Pacific companies and 21% in Europe. In the U.S., the number dropped from 86% of companies to 67%. Only in Latin America did the numbers rise, from 52% to 58%.

There are other complications to creating a security policy that works across international boundaries.

Simple geographic distance plays a large role. Telstra's Harris, for instance, warned companies never to rely on business partners when identifying security issues in their region, as they are typically reluctant to volunteer information that puts their country in a bad light. Instead, rely on country managers, he said.

Another complication is differing regional attitudes about the importance of security. Even at Telstra, awareness of hacker intrusion is far less than in the U.S., company officials said. This makes it more difficult to get employees to focus on the problem.

REGULATORY DIFFERENCES

Similarly, less stringent requirements in Europe and Asia allow banks to be more relaxed about disaster recovery plans there than in other parts of the world. Still, international financial institutions have begun fortifying their operations in those regions. "In the U.S., the major [international] banks have been doing disaster recovery for 15 years," said John Jackson, vice president and general manager of Comdisco Professional Services, a leading disaster recovery firm. "Now they're doing it in Europe and Asia even when the local institutions might not be stepping up to it because they don't have the same regulatory requirements."

Legal differences, including lack of a global encryption standard, only complicate the situation. For instance, the Commonwealth Bank of Australia, Australia's largest retail bank, found it had to seek a special dispensation from the Hong Kong government before it was allowed to use its standardized encryption devices in its Hong Kong corporate and merchant banking operations.

Differences in software availability can also make it difficult to implement worldwide blanket strategies. U.S.-based Otis Elevator Co. found that out when it tried to install antivirus programs at its European subsidiaries last year that were different from those at its U.S. headquarters. It was only later, after several virus attacks, that corporate security officials realized the product provided a lower level of protection than similar antivirus software used at corporate headquarters in Farmington, Conn., according to Alfredo DeFilippo, corporate director for information management.

Static if not dwindling expenditures on security measures only complicate the picture. Datapro's survey of computer security issues noted that average security spending remains steady at about 5% of IT budgets.

The number of companies with published security policies is also in decline. In 1992, 82% had published policies, compared with 54% in 1996. The highest percentage of companies with security policies was in the U.S. and Canada, while the highest percentage planning to implement a security policy in the next 12 months was in the Asia-Pacific region. But the decline was most evident in Europe, with a 10% decrease between '95 and '96.

"Even more worrying are the number of companies that don't have [a policy] because they think they don't need one," said Hyde, who attributes that phenomenon to "information fatigue syndrome."

But it's clear that security can't remain on the back burner. "We have not yet seen reports of global disasters — you know, transnational computer breakdowns," author Roche said. "But with the rise of distributed processing and global telecommunications networking resulting in more and more dependence on international telecommunications circuits, we're bound to see this type of thing occur more."

Duffy is a freelance writer in Somerville, Mass. Contributors to this report include William Spain, a freelance writer in Chicago; Jeffrey Zbar, a freelance writer in Hollywood, Fla.; and Peter Young, a Queensland editor at ComputerWorld Australia.

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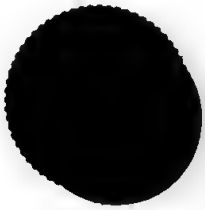

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COMMENTARY

Deflating the Cisco hype

DAVID MOSCHELLA

HIGHLY FLATTERING stories about Cisco Systems have run recently in several major business and trade publications. A common theme has been the possible emergence of a third great IT monopoly. The idea already has its own catchy name, Wintelco. It's a clever combination of Windows, Intel and Cisco, and it's loaded with network and utility connotations.

Wall Street has effectively endorsed the Wintelco scenario, bestowing Cisco with a near Wintel-scale market capitalization of about $40 billion, roughly seven times its current annualized revenue.

But even though Wintelco is a powerful idea and Cisco is a great company, today's Wintel duopoly isn't likely to become a triumvirate.

It's easy to see why some people might think otherwise. Networking is absolutely essential and bewilderingly complex, a combination that increases the appeal of strong industry leadership. No doubt many customers would like to see the simplicity of the Wintel platform brought to the data communications world. Understandably, they will look first to the Wintelco members and allies such as Hewlett-Packard and Compaq.

WINTELCO WON'T WORK

But there are two main reasons why a long-lasting data communications monopoly is unlikely.

First, sustainable IT monopolies, such as DOS/Windows, X86 microprocessors, and S/370 mainframes, have always been accompanied by high customer switching costs. The inability to move easily to another platform has resulted in strong, de facto customer lock-in. In contrast, network architectures tend to have manageable switching costs. As we have seen with NetWare, DECnet and even SNA, users can migrate if a sufficiently compelling alternative emerges.

Second, Cisco hopes to dominate the data communications industry by providing a superior end-to-end network, with a wide variety of products, protocols and services tied together through its proprietary software. But as public carrier services expand, private end-to-end networks will account for a declining share of overall data communications activity. And the technologies required for public and private networks eventually will differ widely in features, capacity and cost.

For example, public carriers are moving toward expensive high-end switches, an area of little interest to Intel and Microsoft. In contrast, customer premise equipment will become steadily intertwined with computer systems and applications. Here, close Wintelco cooperation could provide important industry leadership, but only if the complex interests of the three vendors can be broadly aligned.

Moschella is senior vice president of research at Computerworld, Inc. His Internet address is david_moschella@cw.com.

That won't be easy. Intel and Microsoft work well together because one makes hardware and the other makes software. Cisco makes both. Conflicts with Microsoft seem particularly likely.

This rapidly changing environment, combined with formidable existing competition and a still-healthy start-up environment, makes it unlikely that one company will dominate. That's in no way a criticism of Cisco. It remains at the heart of a communications revolution that is rebuilding the world's information infrastructure. Just don't expect Cisco, or anyone else, to become the Wintel of the network-centric era.

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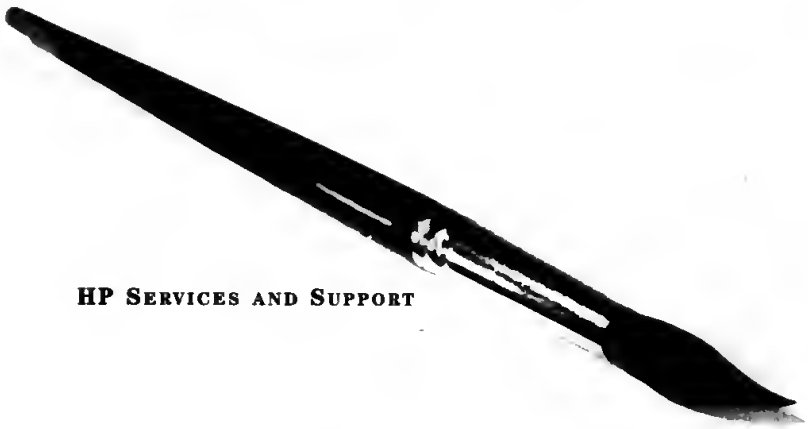

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Briefs

MMX delivers – with the right tools

By Chris DeVoney

INTEL CORP. promised that the Pentium MMX chip — which offers multimedia extensions — would deliver better performance than the standard Pentium. Our tests on three representative MMX-based systems from Gateway 2000, Inc. in North Sioux City, S.D., and Micron Electronics, Inc. in Nampa, Idaho, confirmed that.

PRODUCT REVIEW

But the degree of improvement depends on the software you run, and most of today's business software won't help.

Computers with Pentium MMX CPUs have several internal advantages over their non-MMX counterparts. They have a doubled onboard L1 cache of 32K bytes, better program branching and improved write buffers. Those changes are why MMX machines run most standard programs from 5% to 20% faster.

For businesses, the big performance winners will be in charting and graphing, animation, photo-manipulation, video- or teleconferencing, distance learning, corporate training and some computer-aided design

Pentium MMX, page 46

Sun bundles Platform software

▸ Load-leveling tools boost performance by offering single view of multiple servers

By Jaikumar Vijayan

USERS OF Sun Microsystems, Inc.'s latest technical servers — the Ultra HPCs — soon can expect bundled software that should help distribute and manage their application workload across clustered servers.

The Mountain View, Calif., company this week will announce its bundling arrangement with Platform Computing Corp. in Toronto. Sun will preinstall Platform's Load Sharing Facility (LSF) software on a range of new Ultra technical and engineering servers.

Platform's LSF software optimizes overall system performance by automatically distributing application tasks to different servers and CPUs based on their availability and computing power, analysts said. The software lets users and applications view a cluster of separate servers as one system.

"These are some of the same kinds of tools that have been there forever on mainframes," said Bruce Borden, an analyst at

Sun servers, page 46

Sabre flies big iron in heavy traffic

By Tim Ouellette

IBM's S/390 mainframes have a guaranteed reservation at The Sabre Group, the leading travel services firm in the industry.

And thanks to a mix of older water-cooled and newer air-cooled mainframes, the Tulsa, Okla., company handled the huge computing load that accompanied the threatened strike at American Airlines, Sabre's largest customer.

Sabre is mixing water-cooled mainframes (above) with CMOS models

Both companies are subsidiaries of AMR Corp., but they operate separately.

"It is critical for our principal customers, such as American Airlines, that the system be

Sabre, page 46

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Sun servers get boost

CONTINUED FROM PAGE 43

Smaby Group, Inc. in Los Altos, Calif.

VENDOR TREND

Among server vendors, Digital Equipment Corp. in Maynard, Mass., has offered similar capabilities for years on its OpenVMS clusters.

"And it is a trend we are beginning to see also among other high-end technical server vendors," including Silicon Graphics, Inc. in Mountain View, Calif., and Hewlett-Packard Co. in Palo Alto, Calif., Borden said.

APPLICATIONS MANAGEMENT

With this kind of resource allocation and management capability, users can take down a server for maintenance or upgrading without first having to manually off-load its applications to other servers, analysts said.

PERFORMANCE BOOST

"These are load-leveling tools that basically assign different applications to different machines in a cluster" to boost performance, said James Garden, an analyst at Technology Business Research, Inc. in Hampton, N.H.

That flexibility is especially useful in very large design, simulation or analytical applications that run on clustered servers, observers said.

"Such software is extremely important for us," said Arvind, a professor at the MIT Laboratory of Computer Science in Cambridge, Mass. Arvind is his full name.

"We have nine Sun servers clustered together, but we would rather view them as one system," Arvind explained.

That capability would let users submit a new job to any system in the cluster without first having to consider what applications already run on the system.

MIT uses the Sun cluster in a project to conduct research and develop scientific applications and technology for symmetrical multiprocessing clusters.

Sabre books S/390 mainframes

CONTINUED FROM PAGE 43

available and reliable 100% of the time," said Mike Nelson, vice president for systems engineering and integration at Sabre Computer Services. "We got hit tremendously hard at that time."

The threatened strike prompted travelers to change reservations en masse just prior to the strike deadline. Travelers then rushed to take advantage of the cheap airfares American offered to make amends.

That placed a huge load on the Sabre network, especially on the fares/pricing application. That application, which searches for the best price from point A to point B, is housed on five loosely coupled S/390 CMOS machines that run off one database.

Sabre's deal with IBM calls for the constant upgrade and installation of CMOS-based S/390 systems.

Sabre has a mix of older CMOS processors and the new third-generation processors announced by IBM last fall.

> Sabre handles 52 million airfares – updated five times per day – for more than 300 million bookings a year. Each transaction takes le than two seconds

Nelson plans to add the G4, or fourth-generation, models when they become available sometime this year.

Nelson estimated that during a one-hour stretch of the strike period, the Sabre system handled more than 5,000 transactions per second, which exceeded the previous high of 4,900 transactions per second for peak periods.

"CMOS is much more reliable than the existing ECL [water-cooled] machines, which were reliable to start with," Nelson said.

But users and analysts say CMOS isn't as fast and powerful as the older water-cooled technology — yet.

When the G4 models are released, Nelson said he expects to begin placing those in the real-time environment, which handles the actual details of every reservation. Those currently are handled by water-cooled mainframes.

"The I/O capability of CMOS can't do it now, but the G4s will be able to, and we will be putting them in," Nelson said.

SAVES SPACE

The CMOS systems come with environmental gains, too. Sabre will save in floor space, power usage and maintenance costs because the air-cooled CMOS chips don't require the huge coolers and space needed to maintain the water-cooled systems.

That is important because Sabre lost its final maintenance window when it obtained a client in Iodia and went to a nonstop, 24-hour service schedule, Nelson said.

Pentium MMX delivers – with the right tools

CONTINUED FROM PAGE 43

work. Mainstream business programs, unfortunately, won't be radically improved by MMX.

The Pentium MMX running Windows 95 offers slightly better performance at a modest premium ($100 to $300) over the previous generation of Pentium systems.

As the premium dwindles, MMX machines will become more compelling. The top dog today is still the Pentium Pro processor running 32-bit applications under a 32-bit operating system such as Windows NT.

MICRON MILLENNIA MXE P200

Micron's Millennia MXE P200, which costs $3,238, delivers top-shelf performance in the 200-MHz Pentium MMX class. This machine is impressive running any application and excels when handling graphics.

The midtower box has 64M bytes of RAM; a 3.1G-byte Western Digital Corp. hard disk; an Iomega Corp. 100M-byte Zip drive; a 12-speed Hitachi America Ltd. CD-ROM drive; a Creative Labs, Inc. 16-bit FM-synthesis sound card; a U.S. Robotics Corp. 33.6K bit/sec. modem; a Diamond Multimedia Systems, Inc. Diamond Stealth 3-D 2000 graphics board with 4M bytes of Extended Data Out dynamic RAM using the S3, Inc. Virge chip set; a 17-in. Micron monitor; and Recoton Corp. Advent speakers. The only disappointment was the older-style Microsoft Corp. Mouse, which lacks the thumbwheel of the Microsoft Intellimouse for use with Office 97.

Using standard industry benchmarks, the Millennia MXE ran standard business applications an average of 14% faster than non-MMX machines. For business graphics, the system ran about 22% faster than non-MMX computers.

When we used an MMX-enabled application — Adobe Systems, Inc.'s Photoshop — speed improved from 60% to 340%. Animations and drawing also appeared incredibly lifelike.

It is still early, but you probably can expect third-party suppliers to take advantage of MMX in other multimedia areas, such as video and sound.

Based on its improved general performance or outstanding MMX performance, the Millennia MXE rates highly as a top desktop system.

GATEWAY P5-200 PROFESSIONAL MMX

The Gateway 2000 P5-200 Professional emerged as an excellent desktop choice, especially when we compared it with other MMX systems we have seen and with ordinary 200-MHz Pentiums. It costs $2,584.

The minitower offers 32M bytes of RAM; 512K bytes of L2 cache; a 3.6G-byte Quantum Corp. hard disk; a 12-speed Hitachi CD-ROM drive; an Ensoniq Corp. 16-bit wavetable sound card; a STB Systems, Inc. Velocity 3-D card equipped with 4M bytes of memory and the S3 Virge chip set; a 17-in. Gateway monitor; and Altec-Lansing Multimedia ACS-41 speakers. The software bundle includes Microsoft's Office 97 Small Business Edition with the older Microsoft Mouse.

We ran standard business programs on the system and noted that speed improved 13% over the standard Pentium 200.

The system demonstrated a 20% improvement in business graphics.

Gateway scores were similar to Micron, but the Gateway's improvements with MMX software were slightly less dramatic (60% to 220%). That can be attributed to the difference in RAM (Micron's 64M bytes vs. 32M bytes for the Gateway).

But when considering the price vs. 200-MHz Pentiums and many of the 200-MHz MMX Pentiums, the Gateway is an excellent contender.

GATEWAY SOLO 2200 P5-166 MMX

At $4,179, the Gateway Solo 2200 P5-166 MMX notebook offers near-desktop performance at a respectable price. Using a 166-MHz MMX processor, this 6.9-pound box rivals the performance of 200-MHz Pentium desktop systems.

The Solo includes 256K bytes of external cache; a vivid 12.1-in. active-matrix color screen; standard audio ports; a 4M bit/sec. infrared port; and an ample 2.1G-byte hard disk.

The palm rest holds a pair of stereo speakers and a touch pad that can mimic the capabilities of the Intellimouse pointer. Unfortunately, the two PC Card bays are Zoom Video- but not Cardbus-compatible, which restricts the use of Fast Ethernet and SCSI PC Cards.

The system offers two modular bays that can accommodate a floppy disk drive, an eight-speed CD-ROM drive or a second lithium ion battery.

The portable includes headphones, a casual carrying case, Traveling Software, Inc.'s LapLink and Microsoft's Bookshelf, Money and Office 97 Small Business Edition.

The battery tested at about two hours and 15 minutes, which is typical for a notebook in this class.

Users who take long flights should consider buying a second battery ($190).

The 2200's performance was slightly slower than typical 166-MHz MMX portables.

But it was still superior to non-MMX machines, including 200-MHz Pentium desktops. With MMX-enabled software, the 2200 showed incremental improvements over non-MMX computers.

It isn't the fastest in its class, but the Solo 200 is a practical portable for business users.

DeVoney (chrisd@cybercritic.com) is president of DeVoney and Associates, Inc., a technology research firm in Seattle.

COMPUTERWORLD
For more MMX resources, point your browser at www.computerworld.com/news/97/storyindex.html

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MMX intel inside pentium

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Briefs

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DATA ANALYSIS

Vendors try to cover all querying bases

By Craig Stedman

USER DEMANDS for increased data analysis capabilities are pushing OLAP vendors toward hybrid approaches that mix multidimensional and relational databases.

That is expected to mitigate the drawbacks each database technology poses on its own and clear the way for companies to make broader swaths of business data available to analysis-minded end users.

Online analytical processing (OLAP) vendors until now have split into separate multidimensional and relational camps.

The need for fast responses steers most users to multidimensional technology, which arranges data into "cubes" that can quickly run multifaceted queries. But multidimensional users also quickly hit size limitations.

ESSBASE OPTION

Blue Cross/Blue Shield of Rhode Island turned to Arbor Software Corp.'s Essbase multidimensional database because running OLAP queries in its IBM DB2 relational databases "would take forever and a day," said George Trudel, a business and technology consultant at the insurer. But Essbase "becomes kind of unwieldy" beyond small chunks of data, Trudel said.

As a result, Providence-based Blue Cross/Blue Shield uses

Querying, page 52

CHOOSE YOUR WEAPON

	Advantages	Disadvantages
Multidimensional	• Faster response times on OLAP queries • More complex analytical capabilities	• Limited data storage capacity • Adds a layer of complexity to networks
Relational	• Can make more data available to users • Familiar SQL technology doesn't require new skills	• Query performance can be slow • Often requires heavy data summarization

Users eye imaging ware for desktop

▸ *Wang product converts scanned documents*

By Barb Cole

NEW SOFTWARE from Wang Laboratories, Inc. is bringing desktop imaging to users who might normally shun such applications.

Imaging for Windows Professional is an enhanced version of Wang Imaging for Windows, which is bundled free with every copy of Microsoft Corp.'s Windows 95 and Windows NT.

The Professional Edition includes optical character recognition (OCR) software for converting scanned or faxed documents to word processing or Hypertext Markup Language documents.

It also lets users annotate images and manage and route scanned paper documents.

Eastman Kodak Co. in Rochester, N.Y., in January announced plans to acquire the division of Billerica, Mass.-based Wang that markets the software, but the deal hasn't yet been finalized.

SALVATION BY FAX

Fibron Machine Corp., a manufacturer of heavy machines in Vancouver, British Columbia, uses Imaging for Windows Professional to manage the dozens of faxes it receives each night about orders for the equipment Fibron builds. "These faxes are the lifeline of our business," said Dorian Banks, MIS manager at Fibron. "If we miss one [fax], we can wind up eating the cost of a $100,000 machine."

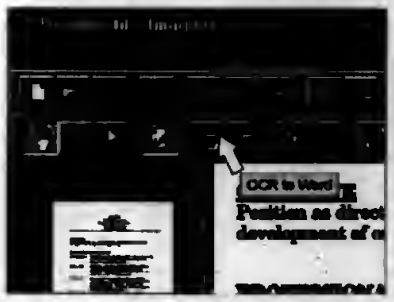
Even so, the firm didn't want to install a specialized imaging system, an option it viewed as too expensive and complex.

Desktop faxing software missed the mark, too, because Fibron needed to manipulate fax images to a greater extent than those packages allowed.

Banks said Fibron can get the image-handling capabilities it needs and keep costs down by using Imaging for Windows Professional, which was announced last month, to handle its critical faxes.

Tom Haley, information systems manager at Creighton University in Omaha, said the

Wang, page 52



Imaging for Windows' OCR abilities let users output information to word processing systems, including Microsoft Word (shown above)

HOW IMAGING FOR WINDOWS STACKS UP

Pros:

- Tightly integrated with Windows 95 and Windows NT
- Inexpensive
- Supports OCR

Cons:

- Can't break up large faxes for distribution to multiple recipients
- Windows-based only

Microsoft prods users to Office 97

By Lisa Picarille

HOPING TO SPEED the adoption of its recently released Office 97, Microsoft Corp. is offering users tools and resources designed to ease evaluation and deployment of the productivity suite.

The vendor also plans to release this summer a fix for file incompatibility among Office releases. Microsoft is offering resources, including access to a World Wide Web site (www.microsoft.com/office/migration), that answer frequently asked questions about the move to Office 97. The offerings are based on several months of feedback from 30 participants in an early adopter program.

Officials said Microsoft has sold more than 5 million Office 97 licenses.

Microsoft also is offering users deployment planner templates, systems policy editors and templates, Systems Management Server support and solutions provider programs (see chart, page 52).

Users who have decided to move to Office 97 can access the Office 97 Resource Kit, a 1,000-page online resource book that gives them detailed information about Office 97 and tips about how to deploy the product.

Microsoft, page 52

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Wang releases imaging ware for desktop

CONTINUED FROM PAGE 49

$79-per-desktop price of Imaging for Windows Professional made it attractive to the university, which uses it to scan resumes and employment applications.

"We needed an inexpensive way to get in to imaging," Haley said.

He said the university has linked Imaging for Windows Professional to its Unix-based electronic-mail system to route scanned information around the campus.

COMPETING PRODUCTS

Jamie Popkin, a vice president at Gartner Group, Inc. in Stamford, Conn., said the "free imaging piece in Windows is nice, but if users need OCR or workflow capabilities, you need to add on."

Popkin said competing offerings include those from Caere Corp. in Los Gatos, Calif., and FileNet Corp.'s Watermark division in Costa Mesa, Calif.

He said Wang has an advantage because most Windows users are familiar with its imaging software from the pared-down version that comes with Windows.

Editor's note: Frankly Speaking, by staff columnist Frank Hayes appears this week on page 61.

Microsoft prods users to Office 97

CONTINUED FROM PAGE 49

Microsoft later this month will release several utilities that are reported to remedy the problem of incompatible file formats among the latest version of Office and previous versions.

The converter lets users set up a default setting in Office 97 to save files in Microsoft's Word 6.0 or Office 95 file formats. But that is only a temporary fix, said Dave Martinez, product manager for Office at Microsoft. He said Microsoft plans to deliver another fix that will make the older file formats binary-compatible with Office 97.

Users also can get a file converter that saves Office 97 files in both formats.

BHP Minerals International, Inc. in Fruitland, N.M., is rolling out Microsoft's Windows NT 4.0. BHP officials said the decision to move to Office 97 is still being evaluated and won't be influenced by the newly available resources. "Under our plan to move to NT, we specified certain standard hardware configurations to run Office 95, not Office 97. We need to look at that," said Louis Campbell, central network administrator at BHP.

"Knowing that Microsoft has these materials available will not convince us to go to Office 97," he said. "[But] in the past, several extensive Microsoft white papers that were available online actually became the blueprint for our migration to NT and saved us six months."

To ease deployment concerns, Microsoft is highlighting Office 97's Network Installation Wizard, which automates remote administration and customization options for groups of users.

For training and support, Microsoft is touting the suite's Office Assistant feature, which consolidates online help from the previous version of Office in one place. Users also can get Office Online Support, which offers Web-based support and technical information, by clicking on the Help menu in any of the Office 97 applications.

Amy Wohl, editor of "TrendsLetter," an industry newsletter in Narbarth, Pa., said Microsoft's efforts are a calculated move to encourage adoption of Office 97 as quickly as possible and to grow sales of Microsoft's 32-bit operating systems.

"Microsoft is mindful of the fact that as customers consider the move to new hardware and 32-bit operating systems, the software suite is up for negotiation. Microsoft is trying to make it as easy as possible to choose Office 97," Wohl said.

OFFICE SUPPLIES

Microsoft offers tools to lessen the load of deploying Office 97

Planning and deployment tools	Function
Migration Web site (www.microsoft.com/office/migration)	Information about Office 97 enhancements, migration issues, tools and resources and links to Office Developer Forum
Office 97 Resource Kit	1,000-page online book about deploying and managing Office 97
Network Installation Wizard	Automates remote administration for groups of users

Co-existence and management tools	Function
Default "File Save As" tools	Defaults can be set to save files in the format of the previous version of Office
File converters	Lets users save new and old versions of a document in one file
Word Save as Word 6.0/ Office 95 converter	Due by the end of Q1 1997 to address incompatibility issues with previous versions

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Querying tool vendors mix it up

CONTINUED FROM PAGE 49

Essbase only for cost and budget analysis. Plans announced late last month for linking Arbor's query engine to DB2 should eventually remove the need to put all the raw data being analyzed into Essbase, Trudel said. Querying then may expand into areas such as financial forecasting and claims analysis.

Fred Meyer, Inc., a retailer in Portland, Ore., also is installing Essbase to run financial and budget analyses. But multidimensional databases hit the wall at about 10G bytes, not nearly enough storage to be of use against inventory and merchandising databases that hold up to 700G bytes of information, said Dennis Thiel, vice president of development at Fred Meyer.

Being able to run OLAP queries against big DB2 databases would open things up, Thiel said. But he added that the retailer will have to keep a tight management rein on relational querying "to make sure the lights don't get dimmed" in its data center.

Arbor's OLAP engine will be combined with DB2 next fall for marketing by IBM. Officials at Arbor in Sunnyvale, Calif., said support for mixing the two databases in applications will be added later this year. The IBM/Arbor deal follows Oracle Corp.'s shipment last month of software that lets its Express OLAP engine access relational databases and run queries.

Informix Software, Inc. is developing a version of its MetaCube engine to plug in to its Universal Server database. Seagate Technology, Inc.'s software unit last year bought a small U.K. company that pioneered the hybrid approach. And sources said Pilot Software, Inc. is readying a mixed OLAP offering.

Having access to both databases "gives us a lot of flexibility," said F. Tomas Tenzer, a senior systems analyst at the University of Massachusetts in Amherst, which uses Seagate's Holos hybrid OLAP software. But relational querying is limited because of performance issues, he said.

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The Enterprise Network

LANs • WANs • Network Management

Briefs

NT print monitor

Extended Systems, Inc. in Boise, Idaho, last week unveiled software that centrally monitors print jobs across a Windows NT network so managers can track usage and bill departments. PrintTrak watches printing activity and builds chargback reports for Windows NT environments. A 10-printer license costs $1,195.

Two-in-one tool

Enhanced software from NHC Communications, Inc. in Mont-Royal, Quebec, combines network and cable management tools in an attempt to simplify troubleshooting. PC-based Winaton tracks the physical connections for up to 2,500 termination points in a variety of networks. Version 2.0 adds the ability to monitor and configure devices that have Simple Network Management Protocol agents. Pricing starts at $1,000.

Surfing for work

NTSpecialist, a World Wide Web site from NT Recruiters International in Seattle, matches Microsoft Corp.-certified professionals with businesses that need Windows NT skills. The site (www.ntspecialist.com) offers a job and resume bank for organizations and individuals.

Filenet workflow

Filenet Corp. in Costa Mesa, Calif., is shipping new versions of its Visual WorkFlo 2.0 and WorkFlow Desktop 5.0 document imaging software for Microsoft Corp. Windows 95 and Windows NT Workstation. It has an expanded set of application programming interfaces for modifying workflow processes. Each package costs $495 per seat.

Domino news gateway

Lotus Development Corp. in Cambridge, Mass., is shipping Lotus InterNotes News Gateway 2.0. It lets users transfer Usenet news between Domino servers and Net News Transfer Protocol servers. It can be downloaded free from Lotus' Web site (www.lotus.com).

56K fight won't slow demand

▸ *Users want speedy Internet connections now*

By Mindy Blodgett

MODEM CONNECTIONS

A SIMMERING standards fight in the 56K bit/sec. modem market is adding a sense of confusion to the excitement generated by the technology, which promises faster Internet connections.

But the chaos is unlikely to slow adoption of the new technology, industry observers said.

The fight over standards is important, because the modem an end user chooses must work with the modems used by his Internet service provider. But users who are desperate for quicker Internet connections are jumping in anyway. Corporate users are typically leery of siding with a technology that may not be the chosen standard. They don't want to get stuck with modems that may be expensive to upgrade.

The standards battle lines were drawn when U.S. Robotics Corp. in Skokie, Ill., released a rival 56K bit/sec. technology to that of Motorola, Inc., Lucent Technologies, Inc. and Rockwell Semiconductor Systems, Inc. [CW, March 3].

"Customers have been calling every day, saying, 'When can I get 56K?'" said Brian Bird, president of Tidal Wave Communi-

Demand, page 58

56K-BIT ROADBLOCKS

- Lucent and Rockwell are working on one standard, U.S. Robotics is working on another.
- The Telecommunications Industry Association won't decide which standard to use until June.
- The competing companies use different code to send information, which makes it impossible for competing modems to communicate.

LAN users upbeat about Newbridge/UB game plan

By Bob Wallace

SOME USERS said they are willing to give the recently merged Newbridge Networks, Inc./UB Networks, Inc. a shot at their LAN equipment and management business. The combined company, which uses the Newbridge name, last week provided details of its product and business road map.

The company, in Herndon, Va., plans to eventually extend its World Wide Web-based network management system to manage Newbridge equipment. It will add its Asynchronous Transfer Mode (ATM) technology to UB's GeoLAN/500 hubs

Users upbeat, page 58

• 3-D view may miss the point

Unicenter TNG not just pretty interface

By Patrick Dryden

COMPUTER Associates International, Inc. may have goofed by emphasizing the arcade-game interface of its Unicenter TNG.

Beta testers reported that the new version of CA's enterprise management suite actually does a lot to help them maintain a complex mix of distributed systems. "Unicenter TNG pulls all the pieces together," said Tony Navarro, manager of systems management at Allegiance Healthcare Corp. in McGaw Park, Ill.

The 3-D interface "helps our customers visualize our systems and connections."
– John Scallan, National Processing

For the first time, Navarro said, he can look at the network and systems management pieces together in a "world view." And he can "map just the piece of that world" that is relevant to managers of business process units, such as order processing or finance.

For a year before it shipped Unicenter TNG (The Next Generation) in January, CA touted the software's three-dimensional, video game-like view.

The product lets operators fly across

Unicenter, page 58

Telnet Hack threatens Windows NT networks

▸ *Microsoft works quickly to offer fix*

By Laura DiDio

A NEW SECURITY threat to Windows NT networks, called the Telnet Hack, can potentially cause total system and network shutdowns.

The Telnet Hack can hit Microsoft Corp.'s Windows NT Server or Windows NT Workstation 3.51 or 4.0 machines attached to a TCP/IP network.

In a worst-case scenario, it can generate 100% CPU usage and result in systems and server crashes.

HOW IT'S DONE

All it takes is a remote client using a Telnet communications utility to connect to Port 135 of a Windows NT Server or Workstation. A hacker then types more than 10 random characters at the command line and disconnects from Telnet.

Those three simple steps cause the Remote Procedure Call Subsystem (RPCSS) to consume 98% to 100% of the machines' CPU cycles.

To restore normal operations, the network administrator or end user must reboot the Windows NT Server or Windows NT Workstation, said Mike Nash, Microsoft's marketing director.

Microsoft has issued a fix, which is available at its World Wide Web site (www.microsoft.com).

Most Windows NT networks use TCP/IP to transmit data across the enterprise, which makes most NT users vulnerable to the Telnet Hack.

Telnet Hack, page 58

Telnet Hack threatens NT servers

CONTINUED FROM PAGE 57

The hacking method has shown up sporadically in the past five weeks, users and Microsoft executives said.

"It's another fun way for hackers to reach across the Internet and blow up an unsuspecting victim's computers — and one more defense mechanism that firewall vendors should add to their products," said Mark Minasi, president of TechTeach International, Inc. in Arlington, Va.

Nash said the Telnet Hack doesn't compromise system or network security. "At no time is the remote client getting access to secure information on either a Windows NT Server or Workstation," he said.

But he said NT clients may be denied access to an NT server because of the near 100% CPU consumption.

Gary Lynch, vice president of information security and business continuation at The Prudential Insurance Company of America in Roseland, N.J., agreed.

Lynch said the Telnet Hack is "ingenious, though not particularly sophisticated."

He said experienced network administrators should easily be able to spot and correct it if they are monitoring CPU usage.

Lynch said Prudential hasn't been hit by the Telnet Hack, but the firm's information systems departments are on the lookout. "Hackers will be encouraged about perpetrating the Telnet Hack because there's no accountability for them — it's very difficult to track," he said.

CRASH CONTROL

The Telnet Hack can crash your Windows NT system

How it works

A hacker types in the TCP/IP address, host name and Port 135 at the command line.

The hacker then types 10 or more letters or numbers.

Within minutes, the RPCSS consumes 98% to 100% of the CPU.

The fix

Microsoft has posted a hot fix at www.microsoft.com/kb/articles/q162/5/67.htm

Demand is high for 56K

CONTINUED FROM PAGE 57

cations, Inc. in Chantilly, Va., an Internet service provider. "It's a mix of businesses and individuals who are looking for the new modems."

Bird, who has been testing the U.S. Robotics modems, said he has achieved speeds of primarily 52K to 53K bit/sec. His users are buying the modems off the shelf or getting the modems through him, he said. Bird said he went with U.S. Robotics because he was already using technology from the company.

U.S. Robotics, which recently announced a merger with 3Com Corp. in Santa Clara, Calif., beat its rivals to market by shipping its modems two weeks ago. Motorola is expected to start shipping its modems this week. At this point, the different modem technologies aren't interoperable.

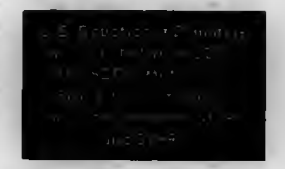
What separates them is the code that lets an end user's modem communicate with an Internet service provider's modems, said Larry Kraft, manager of product marketing at U.S. Robotics. Both technologies give users upload speeds of 34K and 56K bit/sec. for downloading data. But each type of modem has a different method for connecting to the Internet and sending and receiving information, Kraft said.

Because most of the 56K bit/sec. modems are software-based, the modems can be easily upgraded to meet any standards that are set, said Kiernan Taylor, an analyst at TeleChoice, Inc. in Verona, N.J. But that could be a time-consuming task for a company with hundreds of modems.

Officials at the Telecommunications Industry Association (TIA) said they expect the body to agree on standards by June.

Two weeks ago, a consortium of modem makers, including Lucent and Motorola, formed the Open 56K Forum to try to settle the standards issue. U.S. Robotics is weighing whether to join, but company officials last week questioned the need for a second standards body besides the TIA.

"A consumer has to be aware of how their modems can be upgraded and supported," Taylor said. "And if the modems are hardware-based and require a chip swap, that is a bigger deal and will cost end users more in time and money. But if their modems are software-based, and most of them are, they are flexible and can be changed."



Users upbeat about Newbridge/UB plans

CONTINUED FROM PAGE 57

over time. The one casualty of the merger is UB's GeoSwitch ATM switch, which Newbridge officials said will be phased out.

The next six months will tell the story of how successful the combined company will be, said Virgil Palmer, manager of computing and telecommunications infrastructure service at Air Products & Chemicals Corp. in Allentown, Pa.

"We have a bid out to replace about 120 old UB hubs, and UB is in just as strong a position to win the business as 3Com, Bay and Cabletron," Palmer said. "They have the right management team, focus and strategy. It'll depend on how aggressive they want to be to keep our hub business."

There are no specific plans to enhance the GeoLAN/100 hubs beyond a planned Fast Ethernet uplink module, a Newbridge official said.

Looking to complement its strength as a wide-area network and campus backbone switch maker, Newbridge hatched plans late last year to buy Santa Clara, Calif.-based UB, a major supplier of desktop switches and hubs.

A NEW CHALLENGE

Analysts said if the strategy satisfies UB users, wins converts and addresses remote access, Newbridge will begin to challenge Cisco Systems, Inc., 3Com Corp., Cabletron Systems, Inc. and Bay Networks, Inc. for large corporate users.

Air Products is considering upgrading to UB's newer GeoLAN/500 enterprise hubs, but Palmer said he is surprised that UB isn't offering incentives to trade up.

Newbridge said it plans to soon launch an upgrade incentive program. The company wouldn't provide details.

User Brad Hartig said he is pleased to see Newbridge enter the LAN market.

"We've been a Cabletron hub shop for about five years, but we're taking a hard look at what Newbridge/UB has to offer product-wise," said Hartig, a strategic planning and support manager for the municipal government of Scottsdale, Ariz.

"We're interested in their plans for integrated management and want to hear what they have to say on pricing," Hartig said.

Users and analysts lauded Newbridge's plans to integrate its network management application with UB's NetDirector, a Web-based management tool.

That "should enable users to much more proactively manage UB products with the promise of Newbridge products being added to the mix," said John Morency, a principal at The Registry, Inc., a consulting and research firm in Newton, Mass.

Unicenter TNG not just pretty interface

CONTINUED FROM PAGE 57

networks and zoom in to systems to more easily troubleshoot problems.

But that enhancement proved to be a distraction, CA officials acknowledge.

Potential users said they applauded the demonstration product but discounted CA's effort to ease their management headaches.

One user joked that Unicenter TNG would require operators to take Dramamine to ease motion sickness.

"The 3-D interface is a marketing tool without real value. I'll turn it off immediately when we upgrade" in the next few weeks, said Jeff Leggett, network services manager at Mitsubishi Consumer Electronics America in Norcross, Ga.

Leggett said the feature will cost "$8,000 for a graphics card just to support the pretty interface." And he said he fears slow control when a user has to "drill down with a spaceball through 67 levels to find a problem."

'PAY TO PLAY'

But evaluators of Unicenter TNG said the optional 3-D interface is just one facet of the suite that helps them better control business functions.

"You've got to pay to play" with the fancy graphics, but now CA's suite appeals to new audiences in different ways, said Dan Emig, technology marketing manager at Shared Medical Systems (SMS) in Malvern, Pa.

SMS managers use 3-D only for a quick look at their networks and servers, Emig said. Representatives for the outsourcer rely on the intuitive interface and the new version's business view customization to monitor specific customers.

At National Processing Co. in Louisville, Ky., Unicenter TNG helps the financial transaction service remain competitive by "freeing up experts" responsible for a mix of Unix systems and databases and for maintaining high availability, said John Scallan, senior vice president of information services.

The 3-D interface "helps our customers — internal or external — visualize our systems and connections," Scallan said.

"We don't use it so much to find bottlenecks as to sell upgrades to senior management," he explained.

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Briefs

Not much transacting going on

▸ *Client/server-based transaction systems slow to gain users*

By Justin Hibbard

MICROSOFT CORP. and Netscape Communications Corp. last year introduced competing platforms intended to support high-volume online transaction processing (OLTP) on intranets.

Nearly a year later, corporate developers use Microsoft's Active Platform and Netscape's Open Networking Environment (ONE) for basic lookup and communications functions. But few have entrusted OLTP applications to these fledgling platforms, analysts said.

"People have always been hesitant to develop transaction-processing applications on client/server," said Joyce Becknell, an analyst at Business Research Group in Newton, Mass.

That hesitancy has carried over to intranets, Becknell added. Few IS managers believe intranets offer the performance, reliability and manageability that are needed to process multiple transactions in real time, she said.

One company that bucks that trend is Northern Trust Corp. in Chicago. This quarter, it will offer customers an OLTP application that runs on the company's internal network but is accessed via a World Wide Web browser. The application, which bank officials declined to describe in detail, is based on ONE, Netscape's collection of technologies for building distributed applications.

To help with the development, Northern Trust hired The Revere Group Ltd., a Northbrook, Ill., systems integrator. Alex Zatuchny, a senior vice

Transaction processing, page 63

FRANKLY SPEAKING

Web lets customers see IS

FRANK HAYES

THE INTERNET is turning your IS organization into a house of glass.

Suddenly, customers can see — or think they can see — everything wrong with you. Every glitch, every bad design decision, every operational problem — they're all on display on your Web site.

Welcome to the World Wide Web. IS just got a lot more visible.

American Airlines found that out a few weeks ago when it drastically cut fares in the face of a threatened pilots' strike. American's Sabre reservation system is a legend in the travel business, supporting an army of company ticket-sellers and independent travel agents. Occasionally, during peak usage, those users faced lengthy waits for their mainframe terminals to respond. Mostly, though, Sabre snapped right along — the pride of its developers.

But when a horde of Web customers started their feeding frenzy for American's cheap tickets last month, they brought the system to its knees — not just for Web users, but also for professional travel agents and American's own users.

That kind of performance and capacity-management problem will hit plenty of Web sites in coming months as companies start doing more business on the Internet. The reliable, secure, time-tested transaction-

Web, page 62

• Apps linked for big construction jobs

Intranet 'pushes' data among departments

By Mitch Wagner

BECHTEL CORP. is deploying a global intranet project that ties together about 20 separate proprietary applications and gives the company better control over the life cycle of large-scale building projects.

The technology, called ProjectWorks, was designed to automate information transfers among applications. It will be used in the big construction jobs that the $8.5 billion company specializes in: oil refineries, petrochemical power plants, dams and airports — all with price tags of $1 billion or more.

Bechtel hopes ProjectWorks will reduce the amount of time and effort spent moving information from one phase of a construction project to another, saving time and money for customers and the company. For example, information moves from the computer-aided design software used by engineers to materials purchasing and acquisition software to the equipment and materials software used as projects are actually being built.

"The name of the game in competing in construction these days is cost-effectiveness. That can determine whether we win the job at all," said John Jahraus, corporate manager of software development at San Francisco-based Bechtel.

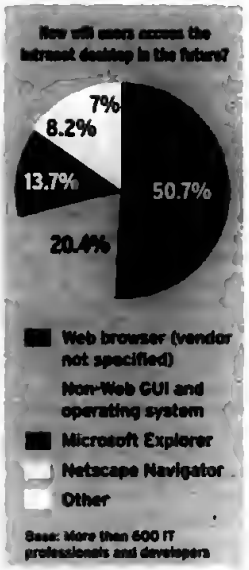
Bechtel built ProjectWorks using middleware from Tibco, Inc. in Palo Alto, Calif., a subsidiary of Reuters Holdings PLC.

Intranet, page 62

The Internet

The World Wide Web • Intranets • Online Services

Briefs



Source: Delphi Consulting Group, Inc., Boston

E-mail virus trap

Symantec Corp. in Cupertino, Calif., has begun targeting viruses spread by electronic-mail attachments with its new Norton AntiVirus for Internet Email Gateways. The software allows administrators to determine what file types they wish to scan in incoming and outgoing mail. It will also check files that have been processed with Zip compression, uuencode and Multipurpose Internet Mail Extensions. Pricing ranges from $1,500 to $6,000 per Simple Mail Transfer Protocol server, depending on the number of users.

Rapid access

Looking to get online in four weeks or less? Connect, Inc. in Mountain View, Calif., Computer Sciences Corp. in El Segundo, Calif., and Hewlett-Packard Co. in Palo Alto, Calif., last week announced a program that will supply users with the hardware, software, training and consultation they need to get an electronic commerce site up in 28 days or faster. The QuickStart Commerce Workshop will help users build sites for customer service, online ordering, catalog management and other functions.

Not much transacting going on

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FRANKLY SPEAKING

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Web, page 62

BECHTEL SAYS PROJECTWORKS, an intranet application that uses push technology, will speed up the building of future projects similar to this power plant opened last year in Northern California

• Apps linked for big construction jobs

Intranet 'pushes' data among departments

By Mitch Wagner

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Intranet pushes data

CONTINUED FROM PAGE 61

The middleware offered a unified set of application programming interfaces (API) for integrating diverse applications, Jahraus said. That lets developers build software modules that link proprietary applications and middleware and convert data to formats readable by both. Keeping the middleware APIs gives Bechtel information systems flexibility to switch or change applications that are part of ProjectWorks, Jahraus said.

Tibco's offering is an example of "push" technology, a much-hyped Internet technology model that pushes information out to the desktop rather than waiting for it to be requested.

One user said ProjectWorks makes Bechtel competitive. "It helps us reduce total costs and to really cut a lot of time off the schedule to build a complex plant," said Larry Hall, corporate manager of engineering.

Bechtel began designing ProjectWorks three years ago as a way to build on the benefits of automated business processes. Information management processes that previously had been done manually were already computerized, so the next step was to tie them together. At the time, data sharing among applications was fairly messy, done by swapping diskettes or with special-purpose point-to-point applications, Jahraus said.

Bechtel began deploying ProjectWorks last July and has been using it for new projects that have come online since. It is deployed at a half-dozen projects so far. Later this year, the company will begin connecting its suppliers to ProjectWorks.

Bechtel has about 200 major applications deployed throughout the company. ProjectWorks focuses on 20 of the most important engineering, procurement and construction applications.

In the future, Bechtel plans to integrate management, financial and human resources areas into ProjectWorks.

Web lets customers see IS at work

CONTINUED FROM PAGE 61

processing systems that work so well today will be linked to the Web — and even if they don't fall apart when the number of users skyrockets, they'll still slow to a crawl.

What's worse, there'll be no one to soften the blow for customers. No friendly voice on the phone will make conversation or collect additional information while the system is stalled. Customers will just remember that the Web site was slow.

That creates a problem IS shops have never faced before. For the first time, customers are directly feeling the results of how well your software developers and operations staff do their jobs.

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NO EXCUSES

Some IS managers have grown very skilled at explaining why bugs can't be fixed or performance can't be improved. Inside a company, users may have to accept those explanations.

But customers don't — especially if they're on the Web. With a few keystrokes, they can switch from American to Delta or from Hertz to Thrifty.

> No friendly voice on the phone will make conversation or collect additional information while the system is stalled. Customers will just remember that the Web site was slow

Suddenly, you've lost a customer. And there's no one to blame but IS.

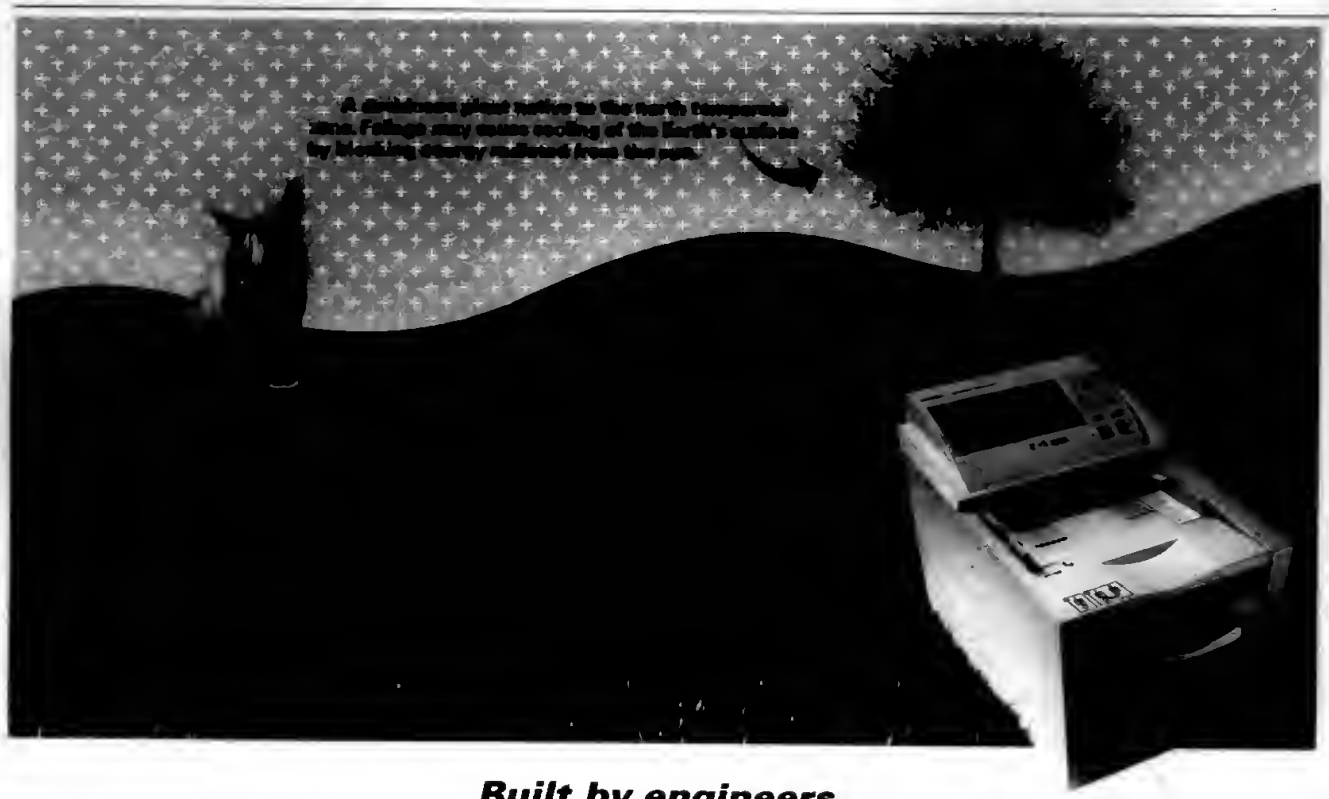
Unfortunately, there aren't any new products that will paper over the limits of your order-processing legacy systems when you connect them to the Web. And you can't hide behind clever Web page designs when a credit check takes forever. You're right out there in plain view. Either you start tailoring your transaction systems right now to support all those new users, or your shortcomings will be exposed to the whole world.

For decades, IS has been nearly invisible to everyone outside your organization. Since companies stopped sending computer punch cards with their bills — the ones labeled "Do not fold, bend, spindle or mutilate," remember? — customers have had just about no contact with the people who crunch the data.

But those days are gone. Now, through the Web, customers will look right into the glass house.

And they'd better like what they see.

Hayes is Computerworld's staff columnist. His Internet address is frank_hayes@cw.com.



Built by engineers.

HEWLETT PACKARD

Sniffer tracks more than just Web hits

By Charles Babcock

WEB SITE TRAFFIC is usually measured by statistics kept in the server's log files. But there is another way to do it that can yield a richer pattern of what is going on at a site.

Accrue Software, Inc. in Mountain View, Calif., produces Insight, one of a handful of available site-analysis tools that sniff incoming and outgoing network data packets to see what is actually happening during a visit.

"Accrue Insight gave us the ability to see response times, live," said Carrie Woerner, an internal integrated services line manager at Perot Systems Corp. in Stamford, Conn. Woerner helped test several site-analysis tools for Perot and is recommending Insight to Perot customers.

Perot's Carrie Woerner

Insight lets company track Web site response times

Seeing response times is important to Woerner because she runs chats and discussion forums at Perot's World Wide Web site, and it makes a difference whether visitors get in to a site quickly. A server log file would detect that a visitor came to the site and downloaded a page, but it wouldn't indicate how long the process took, she noted.

"Sometimes we see plenty of hits all over the site, but there's no sense of whether the users are spending time and getting what they want," she said.

Accrue and other packet-sniffers change that by recording each activity, including its duration, in a relational database [CW, March 3].

The masses of data can be retrieved and analyzed by using data administration tools from vendors such as data warehouse supplier Red Brick Systems, Inc. in Los Gatos, Calif.

Tom Wang, director of strategic planning at San Francisco Web site builder Organic Online, Inc., said Insight helps him create a flowchart "of how people move through the site."

"A lot of times, how the developer assumes people will move through the site is not what they really do," said Wang, whose firm has designed sites for Microsoft Corp., Colgate-Palmolive Co. and McDonald's Corp.

With pricing starting at $15,000, the Accrue software, which comes as a set of Java applications running under Sun Microsystems, Inc.'s Solaris, ranks among the more expensive Web tracking tools on the market.

Transaction processing

CONTINUED FROM PAGE 61

president at Revere, said the development team chose Netscape ONE partly for its support of the Common Object Request Broker Architecture (CORBA).

"CORBA made perfect sense because the objects [in the application] will be a combination of Java and C++," he said.

CORBA lets developers write objects in multiple languages, which can then communicate through various object request brokers on machines that run different operating systems. That kind of platform independence is important for high-volume transaction processing, which may require a combination of powerful midrange and mainframe computers that run different operating systems, Zatuchny said.

By contrast, Microsoft's Distributed Component Object Model, another system that lets objects communicate, currently runs only on Windows NT and Windows 95. Products in Microsoft's Active Platform don't support CORBA.

That single-platform focus wasn't a problem, however, for Turner Broadcasting Sales, Inc. in Atlanta. NT supports an order-entry application the media company built with Microsoft's Active Platform technologies.

Only 200 to 300 employees use the application, so performance problems are rare, said Matthew Drooker, director of technology implementation at Turner. The back end of the application uses Microsoft SQL Server database, which sometimes slows during peak usage, Drooker said. But he said he hopes performance will improve when he installs Microsoft Transaction Server to manage database connections.

However, Drooker said it is unlikely that the Transaction Server and SQL Server could support an OLTP application available on his company's high-traffic Web site.

"I couldn't comfortably say that the back-end SQL Server database could handle 13 million hits a day," he said.

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HEWLETT PACKARD

If a problem is taken care of before it becomes a problem...

did it ever exist?

The snag with so many of today's distributed computing environments is the number of problems that seem to get distributed around the environment.

In the old days of file-and-print LANs, networks ran themselves. Today, with multiple protocol, interconnected LANs and WANs, managing a network can be a 24-hour-a-day pain in the neck. But it doesn't have to be, not with our around-the-clock, seven-days-a-week monitoring program. In fact, since acquiring SHL Systemhouse™ (recognized by industry analysts as a leader in client/server computing), we've built quite a reputation in distributed computing systems. To the point that *Data Communications* magazine just voted our enterprise management service, with its end-to-end, 24/7 service and support, one of their "Hot Products" for 1997. But that's just one of the very many programs we have to help you.

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Briefs

Mediabe in MECA deal

MECA Software LLC and Mediabe, Inc. said they plan to integrate Mediabe's Content content distribution software into financial-electronic financial services delivery products that MECA is developing for banks and other financial institutions. MECA expects to use Content to allow its products to automatically deliver electronic account status information such as balances, transaction details and investment positions to customers when new updated data is available.

GE joins with Thomas

GE Information Services has entered into a joint venture with New York-based Thomas Publishing Co. to form TPG Register. TPG, which will be headquartered in Washington, will provide Internet-based procurement services for industrial customers in the U.S. GE's [illegible] will be combined with Thomas' [illegible]

PC USE IN AMERICA

Use PCs at work or home:	[illegible]
18 to 24 years old:	[illegible]
25 to 34 years old:	[illegible]
35 to 49 years old:	[illegible]
50 to 64 years old:	[illegible]
65 years old and over:	[illegible]
Have worked on a PC with a virus:	[illegible]
Have antivirus software on their PC:	[illegible]

Base: 1,013 adults in a telephone survey for IDG

Source: [illegible]

Paper firm to use OLAP

Stone Consolidated Corp.'s paper division in Portland, Ore., has signed [illegible] agreements to use Realtyware, Inc.'s Web System Corp.'s FYI Planner and FYI Sales software and online analytical processing (OLAP) technology for demand forecasting. FYI Planner is an OLAP tool designed to help logistics, sales and marketing professionals forecast complex demand cycles.

ANDY GOODMAN

The Board of Trade's new network handles hundreds of wireless calls, but it won't eliminate low-tech hand signals on the trading floor.

Trading up to ATM

▸ *Chicago futures floor modernizes*

By Kim Girard

THE CHICAGO Board of Trade (CBOT) is the busiest futures exchange in the world, but until last month, transactions moved on a network stuck in the past.

"The old trading floor was a nightmare," said Don Karmazin, senior vice president of technology at CBOT.

Built in 1929, the trading hall was overcrowded and had no cen-

Trading up, page 66

Smalltalk boot camp pays off

By Julia King
BALTIMORE

YOU CAN definitely teach veteran mainframe developers new object-oriented tricks — plus boost overall IS productivity and worker morale in the bargain.

These are among the key lessons to emerge from a 2-year-old Smalltalk boot camp program at insurance giant USF&G Corp. The company has retrained about 60 of its longtime Cobol programmers to work on Smalltalk development teams with about 65 newly hired college graduates with Smalltalk skills. The new hires also go through the nine-week training program.

"Each boot camp results in a team of experienced people and a project manager to lead them. As they come out, they typically go right into an object-oriented project," said technology architect Peter Haynes.

USF&G also has instituted special training for project managers in charge of object-oriented systems, because there are fundamental differences be-

Smalltalk, page 67

Smaller client/server vendor proves to be a Capitol idea

By Randy Weston

WHEN IT CAME to picking a client/server package, neither a vendor's size nor its name mattered to pipe-fitting maker Capitol Manufacturing.

Albert Strausser, Capitol's vice president and controller, said some big-name vendors —

WESTERN JOHNSON

JBA's client/server package improved Capitol's ability to fill orders on time by 15%

including System Software Associates, Inc. in Chicago and J. D. Edwards and Co. in Denver — were on his company's shortlist. But it was a system from lesser-known British company JBA International Ltd. on which Capitol decided to base its information systems.

"We were comfortable with their size," Strausser said. "The functionality of the manufacturing and distribution modules was what we wanted. ... Very few packages handle both effectively." Plus, he said, JBA is better known in Europe than in the U.S.

Capitol's nine plants and 50 inventory locations now use JBA's System/21 software package to track and plan for shipments of up to 1,000 pipe fittings per day to more than 4,000 customers. Capitol is a Westerville, Ohio, division of the $1.6 billion Harsco Co.

With the new system, Capitol's ability to fill orders on time has improved by about 15%, Strausser said.

Capitol isn't alone. Although many of the large vendors grab the limelight, customers are increasingly picking functionality over name in the manufactur-

Smaller, page 67

Landing the best outsourcing deal

By Thomas Hoffman
LAKE BUENA VISTA, FLA.

IT HAS SEEN a decade since the first information systems outsourcing mega-deals began making headlines. But even though outsourcing has since matured, facilities management remains an ill-defined market for services and pricing.

The good news is that would-be outsourcing customers can use proven techniques to gain leverage in contract negotiations — starting at the bargaining table.

For example, customers should demand up front that an

Landing, page 66

GSA turns to smart cards for security, inventory management

By Sharon Machlis

AFTER USING smart cards for security at President Clinton's inauguration, the U.S. General Services Administration (GSA) this month begins rolling out similar technology at its Washington headquarters.

This marks the first time the federal government's executive branch has used smart cards for civilian tasks, according to Joel Odum, director of business and industry outreach at the GSA. Odum also served as the inauguration's chief operating officer.

The Department of Defense has issued about 90,000 cards to military personnel as part of its Multi-technology Automated Reader Card project, and a few state and local governments also use them.

In January, the inauguration cards tracked which employees had access to certain floors and areas in the inauguration planning center in downtown Washington. Workers also checked out equipment such as portable computers and mobile phones with their cards. About 1,700 cards were issued; the whole program cost roughly $50,000.

CREDIT COMING?

The GSA will start using the cards for building security and inventory management. It is also examining other applications, such as using the cards in the cafeteria and incorporating travel and credit cards within one card. Eventually, all 3,000 headquarters employees should have smart cards, at an additional program cost of an estimated $50,000.

The U.S. Department of Human Services has run a pilot in Dayton, Ohio, for 11,000 food-stamp recipients. The program is slated to expand statewide by March 2000. Ohio officials said they expect the project will cut down on stolen food stamps and other fraud.

Adoption of smart-card technology isn't very far along in civilian government applications, according to Gary Glickman, president of Phoenix Planning and Evaluation Ltd., a consulting company in Rockville, Md. "There's a lot of organizations looking at it that can't make the business case for it yet," he said.

Smart cards cost about $3 to $5 a piece vs. less than 30 cents for a magnetic-stripe card. But smart cards include more functionality, and they can save money if they take the place of multiple cards, provide increased security or eliminate paperwork by boosting efficiency, Glickman said.

At the inauguration, employees gave their cards to guards, who then used card readers attached to PCs to see if workers were permitted to enter an area. One thing project organizers discovered with that system: Guards tended to play too many computer games on duty. "We had to take the keyboards away," Odum said.

Smart cards can save money if they replace multiple cards.

– Gary Glickman, Phoenix Planning and Evaluation

Landing the best outsourcing deal

CONTINUED FROM PAGE 65

outsourcer send only its best people to the bargaining table, said William L. Deckelman Jr., an attorney at Munsch Hardt Kopf Harr & Dinan in Austin, Texas. He spoke at a recent information technology procurement conference here, sponsored by International Computer Negotiations, Inc. in Winter Park, Fla.

Deckelman said that as the outsourcing industry barrels forward with double-digit revenue growth, vendors' contractual resources are being stretched thin. So customers often find themselves "working on a deal where it's obvious the vendor isn't providing its top people," said the former general counsel at Affiliated Computer Services, Inc., a Dallas-based outsourcing vendor.

NO SUBCONTRACTORS

Capital One Services, Inc., the IS arm for bank card issuer Capital One Financial Corp. in Falls Church, Va., is looking into outsourcing the 6,000 desktops used in Falls Church, Tampa, Fla., and Dallas.

Because Capital One is concerned about the security of its credit-card information, it is leaning toward contracting a single outsourcing vendor with no subcontractors, said Tracy K. Deuell, a business analyst at the company's IS unit in Glen Allen, Va.

"You can get vendors to sign confidentiality agreements any day of the week, but [the clauses] don't mean a whole lot," said Deuell, one of the 160 conference attendees.

A tactic that helped The Canada Trust Co. secure a successful desktop outsourcing contract last month was its decision to benchmark the internal costs of running its desktop support operations.

After hiring Real Decisions, a division of Gartner Group, Inc. in Stamford, Conn., in mid-1995 to measure its desktop cost structure, the London, Ontario-based bank learned its desktop support salaries — and consequently, its desktop service levels — were well below industry averages.

"We were throwing bodies at the problem, but not necessarily the right kinds of bodies," said Morag E. Condón, manager of finance and administration at Canada Trust's information services unit.

By the time Canada Trust signed GE Capital Services Corp. last month to a two-year, incident-based deal to manage its 4,000 corporate PCs, the bank lowered its cost-savings expectations to attain higher service levels. "We ended up spending no more than we're currently spending, but we're expecting much better service," Condon said.

PLAYING HARDBALL

Suggestions for negotiating outsourcing deals with third-party vendors

- Decide on your goals.
- Base monthly payments for outsourcing services on results, not time.
- Don't agree to a deal that calls for "mutual accountability" between customer and vendor.
- Play at least two vendors off each other during negotiations and let them know about it.
- Evaluate bids to ensure high service level.

Source: International Computer Negotiations, Inc., Winter Park, Fla., Munsch Hardt Kopf Harr & Dinan, Austin, Texas.

Trading up to ATM

CONTINUED FROM PAGE 65

tralized area to store thousands of feet of wire connecting hundreds of trade booths. "We were constantly trying to pull wires from one place to another," Karmazin said.

But aa computer-based trading staked its claim alongside the old system of open outcry in exchanges around the world, CBOT decided to change.

CBOT invested $25 million of the total $182 million project on technology, including an Asynchronous Transfer Mode (ATM) backbone to prepare the network to carry voice, data or video traffic as well as sophisticated handheld devices for employees in the trading floor pits.

SYSTEMS MODERNIZATION

The new, 65,000-sq.-ft. trading floor — which opened Feb. 18 — boasts a service floor underneath the trading hall where member firms can store their own routers and LAN equipment alongside 27,000 miles of cable wiring and telephone switching equipment.

The cornerstone of the new network is a routing system that automates order entry from remote users — including customers of trading firms — to the exchange floor. That reduces the number of telephone calls, speeds up the trading process and helps eliminate paper.

"Our hope here is that we will see order flow become more efficient, we'll handle more transactions on the floor, and the cost of transactions will be reduced," Karmazin said.

The electronic system isn't intended to replace the complex yet low-tech hand-signal system, Karmazin said, and it will take some persuading to get technophobic firms to try their hands at a new way of trading. That gradual rollout means CBOT won't have system performance statistics until later this spring.

Besides order entry, tracking and management, the system contains historical information about orders and provides electronic-mail capabilities to traders. Touch-screen PCs are mounted in the booths, where staff members use pens instead of keyboards on an interface designed to look like trading cards and order tickets. Using the computers, traders follow mathematical models, news and price information to strike deals around the world.

The floor is equipped with 1,000 phones hooked to 8,000 circuits. Each shared phone system has dual handsets and buttons for 60 lines. The building is equipped with 34 antennas to handle several hundred wireless conversations on headsets and Ericsson, Inc. wireless phones.

SHOPPING AROUND

Bill Wolfe, CBOT's manager of network technology, said the board looked at both ATM and Fiber Distributed Data Interface technologies before deciding to install an Ethernet network with an ATM backbone.

The board is also using a new system to control the giant electronic wall board display. The board uses 62,000 tricolor characters. The display changes at a rate of 1,500 char./sec., according to Mike Boyle, vice president of technical planning at CBOT, who coordinated the system. Prices recorded in the trading pit, cash market information, news services and other information move from a Windows NT server to a PC-based graphical user interface to the wall.

Smalltalk boot camp

CONTINUED FROM PAGE 65

tween developing in a procedural language, such as Cobol, and an object-oriented environment, Haynes said. For example, an object-oriented project requires more frequent reviews to ensure the greatest object reuse, Haynes said.

In 1994, the company standardized on Visual Smalltalk Enterprise tools from Parc-Place-Digitalk, Inc. in Sunnyvale, Calif.

Among other things, USF&G developers have produced an all-new, object-oriented policy-writing application known as Foundation. Developed in 12 months, the system contains 17,000 policies representing $31 million in insurance premiums.

Application development productivity has increased from the mainframe-based rate of five function points per staff month to 18 function points under the object-oriented approach, Haynes said. Function points are standard IS measures used to gauge developers' productivity. The company has about 100 different object-oriented projects in progress, according to Haynes.

The picture wasn't always so rosy, though. In 1994, most of the work on the initial policy-writing system prototype was thrown away after it failed to scale up to enterprise requirements.

"Part of the reason was because we didn't train well enough. We trained people on the tools and not the [business] processes," Haynes said. Developers who worked on the 1994 proof-of-concept system received only a week of training, consisting mostly of reading books. "We had three or four different consultants in here, and when they all got together, they argued," Haynes added.

So in late 1995, with an eye toward replacing outside consultants with its own in-house information systems professionals, USF&G launched the more structured, nine-week Smalltalk boot camp training.

Joe Pattison, a senior programmer analyst and former mainframe developer, was among the early recruits. IS staffers are nominated for the training by senior managers and project managers.

One of the biggest differences from mainframe work is that "there are several right ways to do object-oriented development. With object-oriented, there are so many decisions that are up to the programmer," Pattison said.

"Going back to the mainframe would be like going back to a straitjacket," Pattison added.

Brian Lindner, another former mainframe developer who now develops in Smalltalk, especially likes the teamwork aspect of object-oriented development.

"For years, we lived in dark, dingy cubes. You didn't communicate with a lot of people," Lindner said.

In contrast, the former Cobol developers now work on object-oriented project teams housed in an open office environment complete with rolling work tables and whiteboards.

"The younger people tend to buddy up with the older ones to get to know the business," Lindner said.

If USF&G had used only recent college grads with object-oriented skills but no insurance business expertise, the new policy writing system project wouldn't have been completed so quickly, Lindner added.

USF&G AT A GLANCE

Headquarters: Baltimore

Primary business: Property, casualty and life insurance

Assets: $15 billion

1996 income: $261 million

1996 information systems budget: More than $120 million

USF&G spends an average of $4,000 per IS staffer each year on training. The nine-week Smalltalk boot camp costs the company about $9,000 per person. IS staff turnover rate is 11.4%.

Smaller vendor is Capitol idea

CONTINUED FROM PAGE 65

ing industry, according to Bobby Cameron, an analyst at Forrester Research, Inc. in Cambridge, Mass.

One reason why, Cameron said, is because "packaged applications behave differently" for administrative functions such as financials and human resources from how they work in operations-related tasks such as manufacturing, procurement and supply management.

Name-brand integrated applications from companies such as SAP AG and Oracle Corp. are often necessary for companywide functions including accounting, Cameron said. But at the plant level, companies are letting individual business units make their own choices about which packages fit their needs.

For its part, Capitol was using a mix of homegrown legacy applications that ran on IBM's AS/400 and were designed for single-plant operations. Strausser said the software often duplicated the processes that workers were doing by hand and didn't allow for coordination between the multiple plant and inventory sites.

SUPPORT IS CRUCIAL

But such results wouldn't have happened if senior management and the business units hadn't supported the project, he warned. "Unless you get the chief executive on board, [a software implementation project] is not going to go far," Strausser said. "[Information technology] doesn't run the business; business people run the business. They need to get involved early."

Strausser suggested that the team include business leaders who make the software selection and IT people who serve as technical advisers.

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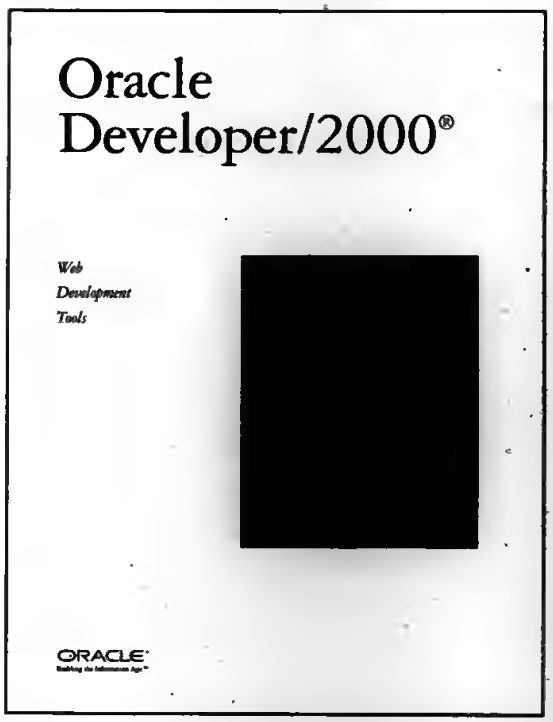
- *"Developer/2000...also provides hooks to other vendors' databases."*
- *"What is abundantly clear, is that...Developer/2000... produces better and more powerful applications in less time."*



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Managing

Paul Strassmann says there's another blow to IS' image on the horizon. Page 76

STILL DROWNING!

JAMES BACHMAN

No one, not even IS managers, has a clue how to stop information overload. Experts predict a backlash. Guess who could take the fall?

By Alice LaPlante

ohail Shafi's workday starts before he leaves the house.

As he begins his one-hour commute, Shafi, director of corporate information technology at Harsco Corp. in Camp Hill, Pa., pops a cassette tape into his car stereo and listens to proceeds of technical conferences he didn't have time to attend. He turns on his cellular telephone. Naturally, he's already checked his electronic mail. Even so, he finds it hard to keep up.

"You simply end up working longer and longer hours," Shafi says about staying on top of the more than 50 E-mail messages and 20 to 30 voice-mail messages he receives daily. He is scrupulous about tending to them personally.

"I'm cautious about discarding things. You never know what you might miss," Shafi says, even though he estimates that 40% of those communiques are throwaways. And that doesn't count the mountains of other data he must delve into daily: network status reports, product reviews, industry briefings, internal memos.

"It's really quite an overwhelming problem, and it's getting worse," says Andrew Garvin, president of Find/SVP, Inc., a research advisory and business intelli-

Still drowning, page 70

STILL DROWNING!

CONTINUED FROM PAGE 69

gence firm in New York. He says few people have figured out how to cope with what he says will wind up being the 1990s' greatest challenge: information overload.

"People are getting fed up," says David DeLong, a research fellow at Ernst & Young's Center for Business Innovation in Boston. DeLong last year wrote a white paper on the dangers of information overload after interviewing several business managers in a variety of industries and jobs on how they cope with the ever-growing influx of data. Mostly, he says, people aren't coping. After hearing the anecdotal evidence, DeLong predicts a backlash. "At some point, people will say, 'Enough is enough,'" he predicts. "I don't know what form the backlash will take, but it will be very, very interesting."

Reuters News Service last year commissioned a study to determine how average workers cope with the deluge of information forced upon them daily. The answer: not well. Reuters surveyed 1,300 businesspeople in the U.S., Great Britain, Australia, Hong Kong and Singapore. They included respondents from a broad swath of management levels and industries, including manufacturing, telecommunications and financial services. A whopping 40% said their ability to make important decisions was hindered by being provided *too much* information. Yet, according to Paul Waddington, Reuters' marketing manager in London and author of the report, one of the more intriguing results of the report was that, even though half the respondents said they couldn't cope with the volume of information coming at them, two-thirds wanted *even more*.

"Which tells us that despite the volume, they're still not getting what they want," Waddington says. He adds that that clearly indicates a "huge opportunity" for IT managers to implement emerging technologies such as intelligent agents and electronic filters.

But many say they fear that IT, rather than being seen as the potential savior, will be blamed as the culprit.

"People are already starting to point fingers," warns DeLong, who says the number of frivolous voice-mail and E-mail messages thoughtlessly copied to automatic distribution lists is probably the No. 1 complaint he hears. "Think about all the hours of an organization's time wasted on processing a single message if it's sent to hundreds of people who don't need to see it," he says.

"I see two ways that people are trying to cope, and neither is particularly effective," says Tom Davenport, professor and director of the information management program at the University of Texas in Austin.

Most people are simply working longer and harder. And because they can't process all the data hurled at them on an hourly basis, "they're just ignoring more of it," Davenport says. "As I travel around to various companies, I clearly see how each of them either already has a huge problem or is going to have a huge problem. And no one is doing anything about it except applying more technology. And I'm not sure that the hair-of-the-dog-that-bit-you approach is going to work here."

DOCTOR, HEAL THYSELF

IT managers themselves are surprisingly vulnerable to information overload.

One vice president of technology in DeLong's study ended his workday at 10 p.m. only after reviewing at home the last of his 500 daily E-mail messages. "These executives spend so much time processing marginally relevant information that they, by necessity, are less responsive to the things that really matter," DeLong says.

Few senior IT executives rely on secretaries to screen their phone calls (it turns out to be more trouble than it's worth, they say), so chances are good that anyone who asks for them will be put through to their direct telephone line. If an IT executive doesn't pick up the phone, his voice mail usually clicks in, and he will almost certainly listen to it by day's end. And anyone anxious to get a message through can always send E-mail, which is delivered directly to the executive's mailbox. Unlike paper mail, it probably won't be prescreened by an administrative assistant on the lookout for advertisements or other nonurgent material.

And surprisingly few IT managers are willing to trust the emerging intelligent agents and other filtering technologies. The reason: They're too primitive.

"These filters tend to be brain-dead because they don't have a good way of determining context," says Marc Demarest, chief knowledge officer at Sequent Computer Systems, Inc. in Beaverton, Ore. By the end of the decade, fuzzy technologies should enable people to build "truly intelligent agents," he says. Until then, Demarest relies on a combination of technology and human filters. "I'm part of a network of human beings who have a good sense of what I'm likely to be interested in right now," he says. He acknowledges that it's a challenge to sort through the 800-odd E-mail messages he receives daily. Yet he doesn't go to bed "until I've responded appropriately."

> "I'm cautious about discarding things. You never know what you might miss." — Sohail Shafi, *director of corporate IT, Harsco*

Why not just hit the delete key when faced with a message of dubious value? "The biggest problem is that I cannot look at what is getting pushed to me and immediately know whether it has value or not," Demarest says. "This company runs on asynchronous communication. I cannot afford to hold up someone else's work."

So the question arises: If the technologists themselves are hesitant to use technological solutions, where are we headed?

True, many companies are finding electronic agents useful for digging through published materials, such as newspapers, magazines and white papers. In fact, most chief information officers say they no longer have the time to read most of the magazines or newspapers in their field.

Instead, companies such as National Semiconductor Corp. in Santa Clara, Calif., are installing electronic agents to help filter the news sources and deliver only relevant articles. A pilot program at National Semiconductor lets employees specify subjects and keywords; the software then sorts through Dow Jones, First Call and other live news feeds.

That works fairly well for Connie Deletis, vice president of information systems at National Semiconductor. "If I want to know more about a particular topic, I can always search the Internet," he says.

DANGEROUS AGENTS?

But Deletis agrees with Garvin, who says, "Overreliance on agents is a very dangerous concept if taken to an extreme." Although it works well if someone needs to keep close tabs on a particular subject, "if you substitute these filters for all your reading, you're in effect narrowcasting your own brain," Garvin says.

Thus, most of the solutions these information experts have come up with are remarkably antiquated.

When Garvin has been away from the office long enough for the buildup to be overwhelming, he asks his assistant to print out his E-mail messages, which he then reads on the way home. "Pretty low-tech," he acknowledges ruefully.

Waddington confesses to occasionally hitting the "delete all" key when he feels overwhelmed. Deletis hasn't yet found an effective way to deal with E-mail or voice mail with either technical or human filters. So he has a morning routine: While his laptop boots up, he changes his voice mail greeting to reflect the current date and checks new messages. He then logs on to his E-mail. "Within five minutes, I'm fairly up to date. If I had to interject someone else into that process, it would be less efficient," he says.

But this works only because Deletis never checks out completely. Ever. If he goes on vacation, he takes his laptop and checks in regularly. "It's more painful to come back to a pileup," he says.

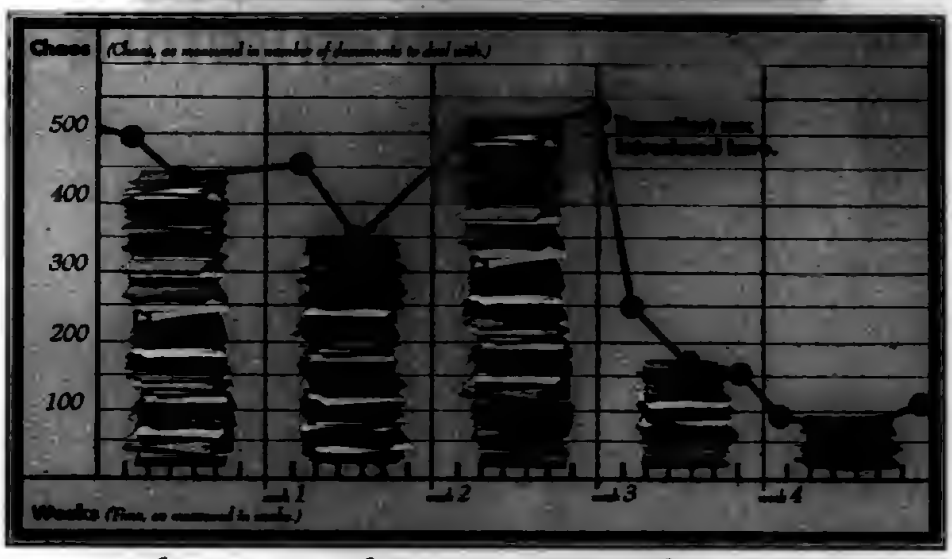
Davenport says the problem of information overload must be addressed on two fronts: individual and organizational. On the individual level, workers are going to put serious thought into "constructing a personal information environment that suits their needs," he says. That means careful analyses of how you spend your time, how you best communicate with others and the most effective times and ways to do that. "Then you can begin thinking about the kinds of 'buckets' you might want to use to store your information," he says. "This will take a pretty high level of personal investment — and I don't see many people doing it."

Experts also say we need organizational strategies for dealing with excess information. At Sequent, that takes the form of discouraging "push" technologies, which Demarest says are "the primary contributors to information overload." Shafi says he's considering a policy about overuse of "CC" features and distribution lists in corporate E-mail that needlessly distribute copies of memos to broad employee groups.

"Information overload has hidden organizational costs that we haven't begun to calculate," DeLong says. "We need to look beyond the things that individuals can do, to organizational solutions."

La Plante is a freelance writer in Woodside, Calif.

THE BUSINESS STRESS-REDUCTION INDEX



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YEAR 2000 SCOREBOARD

An occasional series on year 2000 trends, issues and statistics

All for one . . .

If you aren't sure whether your approach to fixing your company's year 2000 problem is the right one, join — or start — a "support group" for information systems colleagues.

And don't be shy about getting together with some of your competitors; it's already being done.

John T. Jung, vice president and chief information officer at California Casualty Management Co., helped launch a year 2000 user group last summer when he was vice president of information technology at Chubb & Son, Inc., a property and casualty insurance company in Warren, N.J. The group, which will hold its third meeting this month, includes companies Chubb works with and competes against, Jung says.

Among the issues discussed: best and worst practices, vendors, tools, metrics, and motivating and keeping conversion staff.

"We continue to reassure each other that we are staying on the right path," Jung says.

That's one of several goals at the Bluegrass Year 2000 Group in Lexington, Ky., one of 25 U.S.-based millennium user groups listed on the Year 2000 Information Center's World Wide Web site.

"We want things to . . . go as smoothly as possible in this area," says Scott Setters of the Central Kentucky chapter of the Association for Information Technology Professionals (formerly the Data Processing Management Association). Setters is one of the group's leaders.

The Bluegrass group also is raising awareness of the issue at area businesses; The Greater Lexington Chamber of Commerce plays a lead role, Setters says.

"Survival is the issue here," he adds. "Companies should put it at the top of their agendas." — *Rick Saia*

Looking for a year 2000 user group near you? Visit the Year 2000 Information Center on the Web at www.year2000.com/yrtwousergroups.html

Year 2000 Bookshelf

Of three recent books on the year 2000 problem, one can be called the bible, one a good primer and one a confusing mishmash.

The bible is **The Year 2000 Software Crisis: Challenge of the Century** *(by William M. Ulrich and Ian S. Hayes; Yourdon Press Computing Series, Prentice Hall, Upper Saddle River, N.J.; 572 pages; $39.95; paperback)*. It's a clear, comprehensive, yet readable guide to making sure your applications can handle dates in the 21st century. The authors explain the problem and discuss the business risks, various technical fixes and best processes and procedures to follow.

What's unusual is the depth of detail the authors provide on each topic. There's even a section on how to leverage a year 2000 project to make long-term improvements to your information technology infrastructure. The reader never feels swamped with information, because of the clear writing and logical organization.

A good primer for those with less time is **The Year 2000 Problem Solver: A Five-Step Prevention Plan** *(by Bryce Ragland; McGraw-Hill, New York; 263 pages; $29.95; paperback)*. This, too, is a well-organized overview, but it's much less detailed than the Ulrich and Hayes book. The author dispatches year 2000 testing, which can comprise half of a year 2000 effort, in a mere six pages. The last half of the book is an exhaustive list of year 2000 tools grouped by function and platform. Normally, that would feel like padding, but if it helps you find a tool for those old Wang VS applications, it could by itself be worth the price of the book.

The third book, **Solving the Year 2000 Problem** *(by Jim Keogh; AP Professional, San Diego; 257 pages; $27.95; hardcover)*, lacks the depth and clarity of the other two. Much of the information is vague, self-evident or hard to find because of the book's complicated, confusing structure. One of the best sections, a detailed methodology for year 2000 work, is tucked away at the end. That might be a good place to start in deciding if this book is for you. — *Robert L. Scheier*

HOW MANY PROGRAMMERS DOES IT TAKE TO DO THE JOB?

If you have this many lines of code . . .	You need this many programmers . . .	To finish find, fix and test code in
20 million	40 fast	2.5 years
10 million	40 fast	1.25 years
	40 slow	2.5 years
	20 fast	2.5 years
5 million	40 fast	0.6 years
	40 slow	1.25 years
	20 fast	1.25 years
	20 slow	2.5 years

Fast programmer = 200,000 lines of code/year
Slow programmer = 100,000 lines of code/year

Source: Meta Group, Inc., Stamford, Conn.

The latest round of conversion tools won't speed things up much, says Carl Greiner, a Meta Group vice president. They can speed up the "find" and "fix" phases but not the "test" phase, which is about half the effort.

NUMBERS TO SWEAT BY

If you're planning your year 2000 conversion budget, keep these figures from Meta Group in mind:

$120,000 The going annual rate in New York for a Cobol programmer.

$375 The rate paid per hour for a good project manager.

$4.50 the highest rate per line of code paid thus far for a year 2000 conversion. (It's being paid by a major company to a Big Six accounting firm for converting 50 million lines of code, says Carl Greiner, a Meta Group vice president.) The going rate for most third-party conversion firms is in the range of $1.25 to $1.50 per line of code.

20% 1. The amount of the conversion demand that U.S. and offshore third-party conversion firms have the capacity to meet.
2. The amount by which year 2000 personnel costs will increase per year.

Source: Meta Group, Inc., Stamford, Conn.

Looking for the latest information on the year 2000 problem? Visit the year 2000 page on our Web site: www.computerworld.com/year2000/index.html

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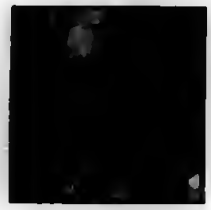
Corporate America is slowly waking up to the shocking prospect of having to sink between $300 billion and $600 billion to fix the year 2000 two-digit stumble. Now another $200 billion of avoidable annual expense is coming to light. And money isn't the only thing at stake. The credibility and reputations of IS managers, IT vendors and consultants also are at risk.

PAUL STRASSMANN

NEXT BLOW TO IS' IMAGE: THE COST OF OWNING PCs



Thanks to the year 2000, corporate executives are wondering if their trust in technical experts was warranted all along. It's finally dawning on the top brass that their computer managers haven't properly maintained their companies' software assets, even though the millennium problem was foreseeable. CEOs have resolved to never again be forced to spend money on something that prudent IS managers could have avoided. No more surprises, please!

THE NEXT NASTY SURPRISE

Guess what? It's with a canny sense of journalistic timing that the influential Gartner Group shone a spotlight on what will become the computer topic of 1997: the total annual cost of ownership of network computers and PCs.

Although the details remain fuzzy about which costs are included — and how much of those will be real and how much will be virtual — two simple messages captured the CEOs' attention:

- Stripped-down versions of PCs (now called network computers just to make a distinction that carries a minimal distinction) are as much as 41% less expensive than the PCs the company just installed after much intraorganizational strife.
- If an organization doesn't want to buy network computers, it can still realize savings of up to 26% just by managing its installed base of PCs better.

It's the second message that gets a good hearing from CEOs. A few simple calculations show that, using one of Gartner's lesser estimates, the savings could amount to $2,860 per PC per year.

If you consider that networked computers in U.S. companies and public-sector organizations will total an estimated 65 million to 75 million by the end of next year, the savings add up to a hefty $200 billion.

The Gartner estimate is reasonable. I've found such opportunities to save money in companies wherever seasoned computer professionals have given up the custody of the PC playgrounds to enthusiastic office amateurs.

That raises an inevitable question: Why haven't the computer managers found a way to avoid such excessive spending on PCs to begin with? A saving isn't a saving if it eliminates something that could have been avoided. One doesn't save money by stopping foolishness.

The business world is sure to ask this $200 billion question; it's too large a sum to ignore. Add it to the cost of fixing the year 2000 problem — if you assume it will cost only $300 billion — and you get about $513 billion, equal to the pretax 1995 profits for the 2,992 U.S. corporations in my database. That accounts for about 87% of the U.S. gross domestic product.

And $200 billion per year also would pay for almost all the annual software development and maintenance costs last year. The idea of cutting avoidable costs is clearly one whose time has come. But will that be the only topic on the top executives' agenda?

A MATTER OF TRUST

The era of exuberant business spending for computers soon will come to an end marked by an eruption of distrust in the ability of IS organizations to manage IT. In hindsight, the one-time $300 billion year 2000 glitch and the $200 billion estimated annual PC overspending will be used to dramatize the chronic abdication of top management responsibilities to technical experts and consultants.

Executives also will start to wonder what may show up next. Can they trust the counsel that advised them to move from mainframes to PCs, from PCs to client/server, from client/server to Internet, from Internet to intranet to outsourcing, and now back to mainframes-in-disguise as network computer controllers?

The intoxicating computer-guzzling party is coming to a climax. Top managers still treat information as an unavoidable expense and hate any costly, avoidable surprises. The emerging sense of distrust will begin in the U.S. and spread worldwide. CIOs, consultants and vendors will be equally affected. CIO turnover, already excessive, will accelerate. Consultants may have to offer insurance coverage or performance bonds to get new business.

This distrust won't diminish the role of computers in society. But it will sober up executives who have become inebriated with technocompulsions during 50 years of unjustified squandering of a valuable tool. It will augur a discernible shift in expectations from hopeful promises to demonstrable results. There will be little tolerance for any IS executive who wastes money to fix avoidable problems.

Strassmann's new book, The Squandered Computer *(The Information Economics Press, April 1997), explains why a new era in information management practices is dawning. His E-mail address is paul@strassmann.com.*

Meta tips:

f.y.i.

In the midst of Meta Group, Inc.'s analysis on technology trends at its 1997 Metamorphosis conference last month in Orlando, Fla., speakers offered these numbers and advice for information systems managers:

IS staffers fail as "account managers": IS professionals frequently fail when asked to serve as intermediaries between IS and other departments. Only 35% of IS professionals succeed as "account managers" or "business technologists," compared with an 87% success rate for non-IS professionals, according to David Foote, program director of the Executive Council at the Stamford, Conn.-based IS consultancy. The reasons the IS pros fail: credibility and people skills (empathy, persuasiveness, negotiation skills), Foote said. "This person does education and a lot of herding of cats. You need credibility on both sides," he said.

Few offer incentives for teams: For all the talk of teams, only 17% of 120 companies surveyed offer at least one team incentive plan. And only 13% of those are cash incentives, according to a 1997 report on information technology pay trends. That's sure to hold back attempts to change IS cultures, Foote said.

The Internet will raise user expectations . . . : The popular excitement about finding information on the Internet will make users impatient with the difficulty of accessing internal corporate data. "IS organizations will be hit by users wondering why they can't get similar access to their corporation's own data," said Aaron Zornes, executive vice president and director of application delivery strategies.

. . . and lead to IS headaches: The Internet is sure to lead to IS headaches as companies try to do more on it. "As you get into complexity, this stuff bogs down real fast," said Meta Group President Dale Kutnick. Issues include the lack of directory services, proprietary extensions, scalability, testing tools and network management tools for intranet applications. "All the same problems you have with client/server, once you get past the simple stuff, will happen with Web technologies," he said.

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   (d) Unix (h) NeXTstep

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Buyer's Guide

SERVERS ON STEROIDS

By Kevin Burden

IF YOUR DATABASE is pushing 500G bytes and growing, you're probably giving serious thought to a massively parallel processor (MPP) system, if you don't have one already.

MPP systems are arrays of processors connected with a high-speed link that are "parallelized" to operate on separate pieces of a major problem.

Analysts say MPP is still one of the best server architectures if you need assurance that a system will scale to any dimension.

But those same analysts believe significant changes unraveling in server architectures will reshape the server landscape, threaten MPP's hold on large processing jobs and create new options for users.

We'll look at some of those changes and how they foreshadow the fading of pure MPP systems and the emergence of hybrid systems that blend the characteristics of MPP with those of symmetrical multiprocessing (SMP) systems.

MPP or SMP?

When do you need MPP? Chris Willard, a research director at International Data Corp. in Mountain View, Calif., says if your applications run on SMP, don't bother with MPP. For example, SMP is a better choice than MPP if you are running applications that require many ad hoc queries, because SMP nodes communicate easier than MPP nodes. SMP also may be the

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SERVERS on STEROIDS

CONTINUED FROM PAGE 77

right choice if you're running online transaction processing systems and don't expect them to grow a lot.

"You get the advantage of a more mature technology with SMP, there's more software that will run on it and it's much easier to manage," Willard says. But if you're running data marts or data warehouses that threaten terabyte capacity, you'll have to "seriously consider MPP," he says.

The architectural difference between MPP and SMP is that each MPP node has its own operating system and memory. This lets MPP nodes crush large volumes of data, but with substantial overhead. SMP nodes share a common operating system, memory and storage. This lets application requests hop among different nodes without the overhead, which better suits commercial applications such as transaction processing.

SMP's affinity to commercial applications is the reason many vendors and industry analysts recommend that commercial users forego MPP, start with SMP and cluster those SMP systems as their needs grow. "That's the root of the holy wars between these two architectures," says Morgan Gerhart, a senior research analyst at Meta Group, Inc. in Burlingame, Calif. "SMP has advantages because it's less complex, but you can grow SMP systems until they're maxed out and useless."

Which vendor?

MPP will be the only option for some users, so Willard advises the following:

- Look at vendors that have experience in your specific industry. "Vendors set up the system, so you want them to know the subtle differences that make the industry unique," he says.
- Pay attention to service plans. "These are complex systems, so look at vendors that have already staffed up and internally trained their people, such as IBM, NCR or Tandem," Willard says. Other vendors are staffing up now, but they face long learning curves.
- Know the vendors' strengths. Vendors have varied philosophies about parallel computing and different levels of MPP experience.

IBM, for instance, is the only vendor that operates in both the commercial and scientific markets, analysts say. IBM has installed several 500-node MPP systems in the scientific community and has dealt with the complexities of designing software to manage them. "That's an advantage no other vendor has," says Howard Richmond, a vice president at Gartner Group, Inc. in Stamford, Conn.

NCR Corp.'s strength is in legacy data and data warehousing. "Its Teradata database is specifically designed to work on those problems," Willard says.

Tandem Computers, Inc.'s reputation is built on nonstop processing. The company has more than a decade of experience with MPP, and its NonStop SQL/MP database is a strong decision-support application, Willard says.

Pyramid Technology Corp. has about 70 MPP systems installed. As a subsidiary of Siemens Nixdorf Information Systems, Inc., Pyramid is strongest in Europe. But the company is slowly establishing itself as a viable data warehousing vendor in the U.S., Richmond says.

Hewlett-Packard Co. last year announced its Enterprise Parallel Server, which is a hybrid that comprises several SMP servers clustered to act as an MPP machine. HP has a lot of ground to make up because it spent the last three years touting SMP over MPP, analysts say. "But it gives HP customers a nice growth path," Richmond says.

Performance

In the commercial market, MPP is primarily used in niche roles such as data warehousing and server consolidation. But some vendors hope to widen the application portfolio by changing MPP's "share nothing" architecture into a hybrid with SMP-like shared resources. "Most workloads in the commercial market, particularly [database management systems], favor shared-resource nodes," Gerhart says.

Evolving to shared resources means swapping MPP's traditional thin nodes for SMP fat nodes, which essentially means trading many slower processors for fewer, faster processors. The bottom line is a faster architecture overall, analysts say. "MPP with fewer fast processors will always beat MPP with a lot of slower processors," Willard says.

IBM, NCR, Siemens Nixdorf/Pyramid and Digital Equipment Corp. already have MPP systems configured with SMP nodes. Now, World Wide Web and Lotus Notes servers — along with moderate-size SAP America, Inc. R/3 implementations — are emerging MPP applications, according to Brian Richardson, a program director at Meta Group's Stamford, Conn., office.

Willard says advances in the individual processors in MPP systems will probably ride the curve of Moore's Law for a few years; the computer industry will continue to double the amount data that can be stored on a piece of silicon every 18 months. "I suspect the improvements will let users get by without having to scale to a tremendous number of processors," Willard says. This all bodes well for reliability, because fewer processors equals fewer points of failure.

Scalability

Scalability of true MPP architectures is far ahead of user demand in the commercial market, except for companies that run extremely high-end applications, Willard says. "Most data warehouses are under a terabyte, so there won't be a lot of need for scalability improvements for MPP in the short term," he says.

But the scalability of hybrid systems shows enough improvement over SMP that they can address certain applications previously reserved for strict MPP systems, Richmond says. "There will always be a need for MPP's power, but the commercial market needs systems that are flexible, and that's why those users should seriously look at hybrids," he says. Their scalability approaches that of MPP, and they have the programming ease of SMP.

Pyramid's Reliant RM1000 represents the emerging class of hybrid servers

Debra Goldfarb, a vice president at International Data Corp.'s Framingham, Mass., office, sees these hybrids as part of the natural evolution of multiprocessing architectures. That evolution had to happen if MPP-type systems were going to succeed in the commercial market, she says. The SMP nodes will process the general business jobs, Goldfarb says. "Then, when it's time to crunch very large jobs, it can be scaled up," she says.

The shared-resource architecture of the hybrids also is more friendly to relational database management systems than the traditional MPP "share nothing" architecture, according to Gerhart. Ad hoc queries need to hit the different nodes of a parallel system, and the SMP nodes in hybrids don't have the overhead that slows down queries.

Features

MPP systems are hard to set up and hard to manage, and it's hard to develop software for them. MPP has had limited appeal to users throughout its existence because of its complexity.

Parallel databases such as Informix Software, Inc.'s Online Extended Parallel Server (XPS) separate users from some of MPP's complexity, which may boost MPP's appeal in the commercial market. And new tools that help users create and implement MPP applications are emerging, analysts say.

Many of these tools will come from small start-ups, Richmond says. When vendors such as Thinking Machines Corp. left the hardware business, it was partly because there were no applications driving MPP in the scientific market. "They put a lot of very smart people who believe in parallel processing out of work. And it's these people who are starting up these new companies," Richmond says.

One such start-up is Torrent Systems, Inc. in Cambridge, Mass. The firm last October released Orchestrate, a development environment that shields users from the complexities of MPP's distributed memory. "There were no parallel applications for the scientific community because vendors had a hard time building them without a development environment," says Allen Razdow, Torrent's CEO.

Citicorp and Lockheed Martin Corp.'s Systems Integration division are putting Orchestrate to the test. Citicorp is programming a data warehouse on an IBM RS/6000 SP to analyze its credit-card portfolio. Razdow says the same Orchestrate application will run on MPP, SMP and SMP clusters.

The vendor war over which system offers the fastest high-bandwidth links between nodes will fade, analysts say. "Having the fastest interconnects is critical for MPP because it's how the nodes communicate with each other," Gerhart says. But users don't need to worry about the interconnects with new hybrid architectures; their shared-memory model doesn't rely heavily on them for communication.

Pricing

MPP systems are expensive. They cost more than SMP and hybrids. And they are more expensive than Non-Uniform Memory Access, a new SMP clustering architecture that delivers MPP scalability in a less complex system.

There are more options for users who need parallel processors, and analysts say MPP vendors feel the strain. "As lower-end [parallel systems] become more powerful, the pressure on vendors to drop MPP prices is mounting," Willard says.

Gerhart says the price of MPP and SMP will converge in the next few years. But he says he doesn't necessarily believe MPP will get any cheaper for users.

"Hardware prices will come down a little. But the size of databases, and therefore the size of systems, will continue to grow. It will be an interesting balancing act for users," he says.

Burden is Computerworld's senior researcher.

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EXT 25

IBM users speak: RS/6000 SP

It isn't flawless, but users give the server high scores

By Amy Malloy

Massively parallel processor (MPP) server: It doesn't roll off the tongue, nor should it. MPP isn't a small or simple undertaking. Generally, companies that turn to MPP servers do so because they have more than 1T byte worth of data to manage.

Of the vendors that offer MPP servers, IBM is one of the major players, analysts say. So *Computerworld* interviewed four users — including commercial and research users — of IBM's RS/6000 SP to get a sense of customer satisfaction. We asked managers who are responsible for RS/6000 SP implementations to rate the product on installation, scalability, performance, compatibility with commercial databases, ease of use and technical support.

Users rate IBM's RS/6000 SP

	Installation	Scalability	Performance	Compatibility with DBMS	Ease of use	Technical support
Penn State	A	A	A	A	A	A
MCI	A	A	A	A	B	A
Sears	B	A	B	A	N/A	B
Livermore Labs	A	A	B	N/A	D/B*	B/D**

Rated on a scale of A (very good) to E (very poor) N/A = Not applicable *D for the systems administrator and B for the end user **B for hardware support and D for software support

The RS/6000 SP has its flaws, but all four users say they would purchase the same MPP server if they had to choose again. But they also complained about the lack of systems management tools. The dearth of tools offsets some of the gains, users say.

Computerworld spoke with the following RS/6000 SP users:

Jeffery Almoney, *director of advanced information technologies at Pennsylvania State University's Center for Academic Computing in University Park, Pa. Almoney uses two RS/6000 SP servers — one with 48 processors and the other with 33 processors — to support research, instructional and intranet applications.*

Chip Grim, *director of sales and marketing systems development at MCI Communications Corp. in Colorado Springs. Grim started with IBM's MPP environment two and a half years ago. MCI currently dedicates 90 of the machine's 104 nodes to support a data warehouse. The other 14 nodes are used for testing and as landing pads for data coming in to the system.*

Ken DeWitt, *vice president of credit information systems at Sears, Roebuck and Co. in Hoffman Estates, Ill. He implemented a 67-node server in December and uses it to support a 2T-byte data warehouse.*

Mark Seager, *deputy department head at University of California Lawrence Livermore National Laboratory in Livermore, Calif. He uses a RS/6000 SP with 512 processors for physics modeling. The server was installed last September.*

Installation

Installing the servers was a smooth process for all four users, and three of them gave IBM an A for installation.

DeWitt says IBM is still in the process of building skills. He gave the vendor a B in this category.

Scalability

All the users said scalability was the primary reason they chose the IBM MPP server. "The RS/6000 SP is a building block; you can build an incredible machine out of it," Almoney says. It is easy to upgrade the system, he says.

Upgrades also went smoothly at MCI, which started with 16 nodes and plans to upgrade to 134 nodes soon, then to 164 nodes. "From a scalability perspective, we knew we had to go with an MPP server, and IBM proved to be the best. At the time, there wasn't a lot to choose from," Grim says.

Sears and Lawrence Livermore — both new to the server — also expressed satisfaction with scalability.

Sears undertook extensive benchmarking before it implemented the RS/6000 SP, because the retailer plans to increase its data warehouse from 2.5T to 10T bytes within a few years.

DeWitt says he thinks the RS/6000 SP is a great platform for leveraging customer information, so Sears is building a customer database on the system.

Performance

Along with scalability, performance is high on the list of reasons users cite for choosing the RS/6000 SP. "We've been pleased with the performance," says Grim, who is getting ready to add another 30 nodes.

Almoney says Penn State needs the high performance offered by the RS/6000 SP because of the high demands the university places on the machine. The system may interact with 30,000 different computers in any given week.

But other users say the machine's response time and performance need work. Their requests include better tools to track queries. Sears is looking for basic tools and relies on some homegrown tools.

Seager has a few more requests. He says the server is good at the starting point, but he wants a chip with faster integer performance and an enhanced I/O system.

Compatibility with DBMS

Users say they want the information quickly, and they want to receive this information easily. So they demand tight compatibility between their database management systems and their MPP servers.

Informix Corp.'s XPS may be the answer for RS/6000 SP users. Two of the four users gave IBM an A for compatibility with commercial databases, and both use XPS. MCI encountered some compatibility problems between Informix and an IBM switch, but the two vendors impressed the telecommunications giant with their cooperative resolution.

Similarly, Sears and Informix have what DeWitt calls "good synergy," and the database's compatibility with IBM's server satisfies Sears. The company chose Informix several years before the IBM RS/6000 SP installation.

Penn State is only dabbling with parallel database but plans to go into production with IBM DB2 on the RS/6000 SP later this year.

Ease of use

Because they deal with computing on a massive scale, the users went into the MPP process expecting it to be complicated. But they say they're generally pleased with the environment. "It's as simple as it can be for anything of this size," Grim says.

Almoney says building codes on laptops and scaling them to the server system simplifies use of the RS/6000 SP. The same code runs in the laptop and the nodes of the RS/6000 SP, Almoney says. And the code is used via a shared file system, or it's moved using file transfer protocol, he says.

Sears declined to grade the server's ease of use. DeWitt says it's still too early to provide a fair assessment.

Seager offered two grades on ease of use from the systems administrator's standpoint. He says the system is difficult to manage, the tools are cumbersome and that making changes can be time-consuming. He says he hopes IBM will simplify the systems administration interfaces, speed up the process of installing configurations and make the reboot process more reliable. But from the user's standpoint, he says, the total view debugger works well, and the interactive response is fairly good. Seager says he'd like to see improved compiler time.

IBM's technical support

When IBM addressed their problems, users found the vendor responsive. "They take us seriously," Almoney says. He says he likes the fact that the vendor trusts Penn State's assessment of a problem. Grim agreed. "When we've had failures at 2 in the morning, they've had someone come within an hour," he says.

The other managers didn't provide such high grades for IBM's technical support. Seager says he likes IBM's hardware support but that he found the software technical support to be marginal. He says he would like the "software support organization to become more fluent in SP idiosyncrasies."

IBM responds

IBM didn't comment on areas of user dissatisfaction.

Malloy is Computerworld's assistant researcher.

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NCR users speak: WorldMark 5100M

Scalability and performance meet user needs, but management tools are lacking

By Amy Malloy

There aren't a lot of massively parallel processor (MPP) systems in commercial use, but those that are in use host the world's largest data warehouses.

Companies rely on MPP servers to handle massive amounts of data; NCR Corp.'s WorldMark 5100M is one of those servers.

WorldMark 5100M customers, like IBM RS/6000 users, want more tools to manage the server. NCR's lack of relationships with third-party MPP vendors frustrates users. But those users have cut Dayton, Ohio-based NCR some slack; they place part of the blame on the third-party vendors.

One user configured his WorldMark 5100M server for a symmetrical multiprocessing (SMP) environment. He says this gives him access to more management tools while he waits for the MPP tool market to catch up. But the scalability, performance and minimized complexity of the WorldMark 5100M outweigh this drawback. As one user says, you can write applications in this complex environment without having to deal with a lot of the complexity of parallelism.

Analysts say NCR is a major player in the MPP world. The four NCR users we spoke with rated the product based on installation, scalability, performance, compatibility with commercial databases, ease of use and technical support.

Users rate NCR's WorldMark 5100M

	Installation	Scalability	Performance	Compatibility with DBMS	Ease of use	Technical support
Transquest	B	A	B	B	B	B
General Accident	A	A	A	B	A	A
Hallmark	A	A	A	A	B	B
Wal-Mart	A	A	B	A	A	A

Rated on a scale of A (very good) to E (very poor)

***Computerworld* spoke with the following users:**

John Cahill, *assistant vice president of information systems at Transquest, a subsidiary of Delta Air Lines in Atlanta, was one of the first WorldMark 5100M users. The system supports the company's frequent-flier program, a data warehouse and other applications.*

Charles Drumm, *a senior business consultant at General Accident Insurance, Inc. (GA) in Toronto, installed a WorldMark 5100M in the middle of last year. But GA set up the server in SMP mode to take advantage of the greater supply of management tools for SMP environments.*

Tony Marshall, *a senior analyst at Hallmark Cards, Inc. in Kansas City, Mo., moved from NCR's Teradata 1012 to a WorldMark 5100M at the end of last year. He says he gained expanded capacity for a large retail decision-support system that runs on 16 processors.*

Randy Mott, *senior vice president and chief information officer at Wal-Mart Stores, Inc., installed a WorldMark 5100M last year. The Bentonville, Ark., company is scheduled to upgrade from a 32-node system to a 96-node system in May or June to accommodate the growth from a 7.5T-byte to a 24T-byte database.*

Installation

Users were satisfied with the installation of the WorldMark 5100M; they gave NCR high marks in this category. "There were few problems considering the complexity of our system," Marshall says.

Mott says NCR met Wal-Mart's schedule. And the company began the process of loading information on time, he says.

Of the four users interviewed, one was reluctant to give NCR an A. "[NCR] did a competent job; it was nothing exceptional," Cahill says. Instead, he gave the company a B.

Scalability

These WorldMark 5100M users chose the server less for what it can do now and more for what they expect it to do in the future. "We have not exercised the high end of [WorldMark 5100M's] capabilities," Cahill says. But with an eye toward the future, Cahill says he expects the company will use the system's scalability as the data warehouse grows.

Hallmark will probably double the size of its database this year, Marshall says. "We are toward the bottom of scalability, and there is a long way we can go," he says.

Wal-Mart posted $104 billion in sales last year, so the retailer needs a massive data warehouse to store product and customer information, Mott says. "They've been the only vendor responding in terms of the size we are trying to use [the server] for," he says.

Performance

With Wal-Mart's volume, performance is a challenge for NCR, Mott says. But he gave the vendor a B. He says it's a better grade than he would give any other vendor, and he pointed out that Wal-Mart's long relationship with NCR proves that the company is satisfied. But others readily gave NCR "A" grades in this category.

Compatibility

Sticking with proprietary databases may be the best bet for MPP users. The two users who didn't complain about their databases employ the Teradata database — specifically meant to run on the WorldMark 5100M — as their primary database. Besides Teradata, Wal-Mart uses Informix Corp. databases and IBM's DB2 without difficulty. Mott says NCR is as good as any vendor in this area.

Of the users who had complaints, better connectivity between the server and database and integration with database tools topped their wish lists.

"There are a few missing pieces between NCR and commercial databases," Drumm says. GA isn't the only company that has encountered problems. Transquest has also had problems using commercial databases on the server. "I can't confidently say it is an Oracle [Corp.] or NCR issue," Cahill says, referring to the compatibility problems GA had with Oracle and the server.

Ease of use

Becoming comfortable with the WorldMark 5100M is a learning process, Marshall says. "When you first get into MPP, you can have some problems. The trick is spreading the load evenly across the processors and getting it to operate in a parallel mode," he says.

"Some of the off-the-shelf tools aren't at the top of the list," Cahill says.

NCR's technical support

A few NCR customers hesitated to provide A's for technical support, claiming there is always room for improvement. But they applauded NCR's responsiveness. After some initial problems with its first server, Transquest found that NCR was willing to work through the issues. The vendor ended up installing the final server ahead of schedule.

Hallmark initially had someone from NCR sitting with them all the time, but that's no longer the case. Now the technical support is pretty good, Marshall says.

NCR's promptness and expertise impressed a few users. When there's a problem, "the technicians come in right away," Drumm says. Wal-Mart has benefited from the vendor's top technical staff members. "At an account level, NCR gets technical people involved. That does not happen a lot," Mott says.

NCR responds

NCR on Jan. 14 announced a strategic relationship with Computer Associates International, Inc. in Islandia, N.Y., which would make CA's Unicenter TNG the enterprise management solution for NCR platforms. This should address users' complaints about management tools, officials say.

NCR and Informix in Menlo Park, Calif., last September developed an alliance. The vendor claims to be dedicated to fixing any problems with the server and commercial databases. There are Informix engineers at NCR to ensure that NCR is up-to-date on database developments, according to NCR officials.

NCR is deploying the 200-MHz Pentium Pro on the WorldMark platform, and it will be generally available this month. This should provide greater computing power, officials say. And frame relay and Asynchronous Transfer Mode capabilities are scheduled to be available this April, NCR officials say.

Malloy is Computerworld's assistant researcher.

In Depth

TOM MCNAMAR

Charlie builds a network computer

'You're our technical editor,' we told Charles Babcock. 'Go make one of those $500 boxes everyone's talking about.'

My assignment: Build a $500 network computer.

It sounded good when Steve, my editor, broached the idea. I would build an inexpensive piece of hardware and configure it with software downloaded from the Internet. No problem.

That would show how feasible the network computer is. Anyone can build one. My feat would impress my friends and put me ahead of Oracle Corp., IBM and Sun Microsystems, Inc., all of which are struggling to produce their own network computers.

"Piece of cake," I told Steve, though in fact I hadn't built a piece of hardware since I put together a crystal radio set in the seventh grade.

Today, I'm at a desk littered with elec-

Charlie builds, page 84

Charlie builds a network computer

CONTINUED FROM PAGE 83

tronic parts. I'm way over budget and past deadline. In retrospect, I would have to say we didn't think through the whole problem.

BLUE-LIGHT SPECIALS

The goal was to create a minimal machine using off-the-shelf parts. But to achieve that goal, I went on a hardware-buying spree that would make an arms dealer blush.

Steve and I had conflicting goals. We wanted to take advantage of the huge PC supply chain — mail order, wholesalers, used-parts dealers — to get an inexpensive system. But I needed to meet a network computer specification that PCs don't. For example, my creation had to support the Network File System and run Java.

Network computers are usually attached to a network, but mine would be attached only to the Internet. In effect, I had agreed to build a stand-alone network computer, which would lead to problems. For example, I planned to download software from the Internet. "But download it to what?" I asked myself as I started plugging in wires and connectors. The network computer specification doesn't designate any local storage.

There was another difficulty. The authors of the specification at Sun, Oracle and IBM would never have agreed that I should use Windows as the initial operating system. That was my own idea; I'd build a piece of standard hardware, go out on the Internet and then convert it to a new system. That led to a rash of trouble.

There was also time pressure. Oracle and Sun could talk about network computers for a year without completing one, but *Computerworld*'s version had to be built in three weeks — with me taking a week off in the middle to get married.

NUTS AND BOLTS

It isn't that hard to build your own computer. You don't need a soldering iron or a set of tools. All I used was a Phillips screwdriver, a pocketknife and a magnifying glass to help me find the tiny number 1s painted on the circuit boards.

But I managed to find ways to complicate things.

I took a friend's used Intel Corp. motherboard and equipped it with a 75-MHz Pentium chip ($102), a borrowed video card and a Creative Labs, Inc. SoundBlaster sound card. The machine refused to boot. I bought an Advanced Micro Devices, Inc. 5X86 133-MHz motherboard ($115), new memory modules and a new video card.

As the parts piled up on my desk, my inexperience began to show. The assembled parts had to be within reach of the power supply wires. With cords and cables running everywhere, I set the floppy drive on the metal case. The power was on — my fledgling system immediately shorted out.

Another time, I dropped my 1.2G-byte hard drive seven inches to the desktop; it made awful clicking noises. Time to head to the Disk Drive Depot in Mountain View, Calif., for another refurbished unit. So far, the score was network computer functionality, zero; expenses, $781.

I mail-ordered a keyboard, a mouse and a modem. I pressed my own monitor into network computer service. (I have yet to see a $500 network computer that comes with a high-resolution monitor, and mine wasn't going to be the first.)

But my real concern was the operating system, on which the network computer specification is silent; it's left to the discretion of the builder. But the need to run Simple Network Management Protocol and full Java applications instead of just applets eliminated Windows.

I explained my dilemma to Brian Healy, Sun's JavaStation product manager. Healy sounded too stressed by his own production issues to worry much about mine. He advised me to buy a copy of Sun's Solaris, "which has everything you need." But I didn't need its $750 price tag.

Oracle's Network Computer, Inc. subsidiary plans to use a microkernel operating system, NCOS, from Acorn Computer Group PLC. Unfortunately, review copies weren't available.

As I rummaged around the World Wide Web, I was amazed at the amount of documentation on Linux, a Unix-like shareware system that can share files with MS-DOS. I wanted some symbiosis with Windows initially, because the two would coexist on my machine. Linux also is used frequently as a server on the Internet. What better network computer operating system?

Friends warned that it's difficult to make Linux run alongside Windows. I tried to repartition my hard drive and load a recommended utility, System Commander, to hide Linux from Windows. But as I reloaded Windows 95, something went wrong.

LUNCHTIME FOR WINDOWS

Windows spotted the System Commander files and sent its ScanDisk utility after them. As ScanDisk tracked down each one, it messaged that each file was damaged. Windows refused to continue to reload unless I clicked on the Fix It option. ScanDisk fixed them all right; it reduced their length. It munched through file after file like Pac-Man.

Technical support at V Communications, Inc. in San Jose, Calif., System Commander's maker, told me to start over. First, I must load DOS to repartition the hard drive. Then I was to load Windows, then System Commander. After that, I could load Linux.

I exchanged high-fives with a co-worker the first time my bench-built system booted and gave me my choice of operating systems.

But I haven't cruised the 'net all that much yet. Linux refused to recognize my 33.6K bit/sec. mail-order modem (whereas Windows recognized it), probably because no volunteer developer has written a driver for it.

Nevertheless, I've been able to download various browsers from the 'net. As I work out the kinks and learn Linux, I'm struck by how I'm laboring between two worlds: one that popularized windows and one that simply uses a windowing interface as one of many features that can be networked. With Windows, I get the ubiquity of a proprietary standard; with Linux, I get the creativity of a shared environment over the 'net.

Being forced to improvise and rely on the Internet has changed the rules of the game. I don't see why I should be so dependent on a few vendors for basic technology when so much good software is available over the 'net.

I'm also pretty sure network computers will cost more than we think. My effort cost $1,211.95 and could be a barometer of what a $500 computer really costs. I would hurriedly add that few network computer producers are likely to match my manufacturing methods or economies of scale.

At the end of my project, I honestly don't know why some pieces of equipment worked together one day and not the next. But I know if I could just buy another modem, one with drivers for both Windows and Linux, I'd have a full-function, dual-brain turbo network computer. Unfortunately, my editor has put me under strict orders not to spend another dime.

Babcock's Internet address is charles_babcock@cw.com.

---

charles_babcock @ cw com

To Steve Ulfelder/Computerworld
cc
Subject Re NC story

```
Steve  Neat idea! We'll beat
the big guys to the punch with
our own network computer
$500 should cover it.
cut me a check and I'll get
going

/Chas
```

---

charles_babcock @ cw com

To Steve Ulfelder/Computerworld
cc:
Subject Re NC story

```
Steve  How firm is that $500 budget
for the network computer? I've hit
a few snags, will explain on phone

/Chas

PS  Also, any flexibility in
that deadline?
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charles_babcock @ cw com

To Steve Ulfelder/Computerworld
cc
Subject Re NC story

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Steve  Since you ask, final tally
was $1211 95  Will flesh out details
in expense report.

/Chas
```

[redacted]

To: Charlie Babcock/Computerworld
cc:
Subject: Re: NC story

Chas: Accounting has requested a meeting with both of us, pronto.

/Steve

PS: Dress nicely.

PPS: Try not to say "bean counter" this time, OK?

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IT Careers

Desperate for IS talent, small and midsize cities are starting to market themselves as picture-postcard oases for IS employment / By Leslie Goff

GREETINGS FROM THE (SAD) STATE OF IS STAFFING. HAVING A TOUGH TIME. WISH YOU WERE HERE.

Across the country, small and midsize metropolitan areas are scrambling to meet local demand for skilled information systems professionals. In many less-populated areas, the number of open IS jobs has far exceeded the supply of qualified professionals. And too often, location, local pay scales and other barriers inhibit the ability of area employers to recruit from outside the region.

Consider, for example, the state capital of Missouri, Jefferson City, population 36,000. A survey last fall of 29 local employers identified 1,227 IS jobs in the city, of which 76 were either unfilled or expected to open up soon, according to Jan Grecian, assistant to the chief information officer at the state's Office of Information Technology. Grecian is also co-chairman of the new Jefferson City Information Technology Training Coalition, which was set up to address the shortage of IS professionals.

Desperate times call for desperate measures. So in cities as diverse as Jefferson City; Columbus, Ohio; Omaha; and Hollywood and San Jose, Calif., community boards, city halls and chambers of commerce are engaging in a variety of grassroots initiatives designed to increase the available IS workforce and market their cities as desirable places to pursue a career.

Columbus

FORGET *Good-bye, Columbus.* This city's chamber of commerce and large IT-based employers want you to say, "Hello, Columbus." Local industry and city government have forged an alliance to recruit IS professionals to the city via a national advertising campaign launched last September. The theme: "Columbus: A better place to be."

To create an image of Columbus as the ultimate spot for young IS professionals, the campaign includes glossy testimonials from high-tech professionals who relocated to Columbus from other urban areas such as Seattle and Dallas — including a young, hip data services manager pictured on his Harley-Davidson.

"We have to promote ourselves differently than we ever have before," says Bill Holley, an executive vice president at the Greater Columbus Chamber of Commerce. "The reality now is we have literally thousands of jobs open in the technical arena for programmers, network engineers, systems engineers — for all positions."

Columbus is a key hub in the nation's telecommunications infrastructure. The city has attracted several smaller telecommunications firms and large IT users. The increase of companies and available high-tech jobs has far outpaced the local labor pool.

Dan Watt, a senior systems engineer at LCI International, Inc. who relocated to Columbus from the Washington area last August, says he has found truth in the advertising campaign's message.

After visiting several Midwestern cities, Watt and his family settled on Columbus, in part because "we noticed there seemed to be a lot of different age groups here, and we thought that would make it a friendly community."

Jefferson City

JEFFERSON CITY is one of those state capitals no one can ever remember. One of Missouri's larger, better-known cities — St. Louis or Kansas City — usually gets the credit. And those cities, which flank Missouri on opposite ends of Interstate 70, also draw most of the state's computer science graduates and established IS professionals.

Located in the middle of the largely rural state, Jefferson City's low profile hasn't done its local employers any favors in recruiting out-of-state IS workers.

Mike Brezen, CIO at the state government, which is Jefferson City's largest employer, notes that although the cost of living is lower, area IS salaries can be as much as $20,000 less than those in larger cities.

In an effort to bring companies such as Central Trust Bank, Andersen Consulting and GTE Data Services some staffing relief, the state Office of Information Technology last summer created the Jefferson City Information Technology Training Coalition.

With membership consisting of local IS managers, the Office of Information Technology and seven colleges and universities, the coalition aims to "home grow" its own local IS workforce. It will try to do so by aligning educational opportunities in the area with available IS jobs and career tracks.

"We really like to hire from the central Missouri area," says Bob Boeckman, a vice president and IS manager at Central Trust, a member of the coalition. "We're concerned about retention. We find that when we hire from outside the area, they work for us three years, get their training and then are ready to go home. So we feel more comfortable trying to ... create a local employment base to draw from."

In the meantime, businesses and colleges are working together on new curricula, certifications and continuing education offerings that match local needs.

Omaha

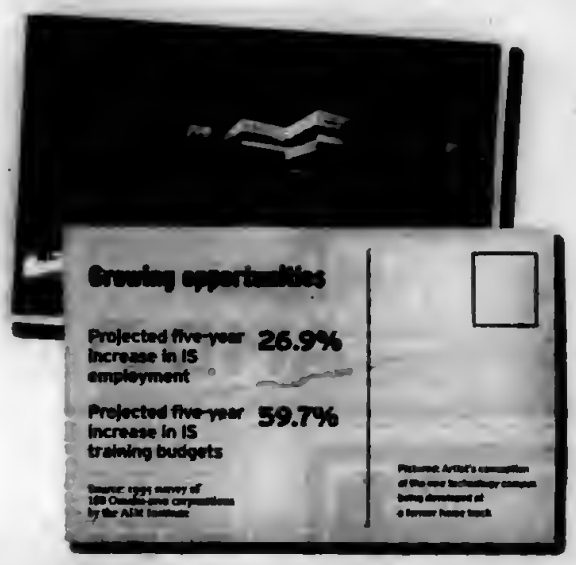
OMAHA CLAIMS some of the largest transaction-processing operations in the country. And it is arguably the direct-marketing capital of the world. Yet it remains largely outside the national consciousness. "Nationally, Omaha really doesn't have an image," says Vicki Meinhardt, a vice president at First Data Credit Card Services Group, a provider of credit-card transaction processing and electronic-commerce services. "With recent graduates and singles, it's very difficult to get them to come look at Omaha, much less to move here," she says.

But a new community culture is emerging that could make Omaha known for its IS education and career opportunities. AIM Institute, a local IS consortium founded in 1991 to promote economic growth around IT, and the AKSARBEN project, a partnership between First Data and the University of Nebraska at Omaha to develop a major new technology campus, have fostered considerable awareness of IT needs.

In the early '90s, Omaha employers faced a huge IS labor shortage. Local colleges traditionally have had Cobol-heavy computer science curricula, resulting in mismatched supply and demand.

AIM fosters close cooperation between the business and academic communities and assists employers with nationwide IS recruiting via a link on the World Wide Web and work with the city's Labor Availability Task Force. The efforts have had significant results: Area colleges are focusing on client/server technologies, new IS courses and degrees have been made available, and IS enrollment is up.

"I think having a richer training environment in the community ... creates an infrastructure that helps maintain Omaha as a viable [IS job] market and keeps people here," says Robert Sweeney, executive director at AIM.

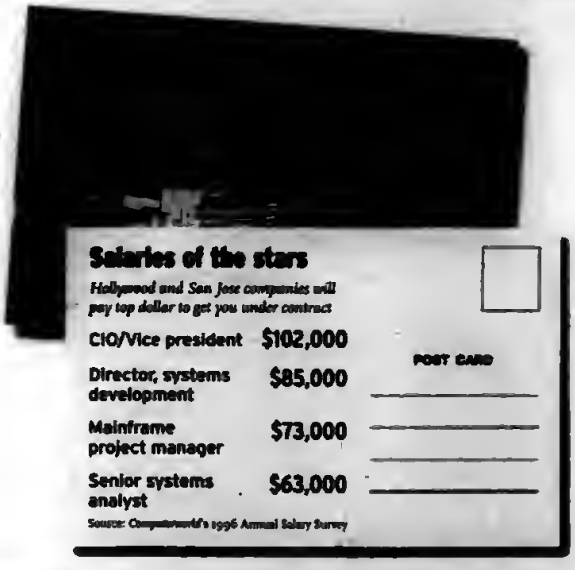


Hollywood and San Jose

IN THE MULTIMEDIA companies in Silicon Valley's San Jose and in Hollywood's film production and postproduction shops, the convergence of IT and entertainment is creating a critical gap in the local IS job market.

Seeking to cultivate a larger pool of "creative digital workers" — IS professionals who are both artistically trained and technically skilled — three nonprofit professional organizations have teamed up to create SkillsNet, a partnership that aims to define employers' requirements, match those to high school and university course development and create awareness, especially among young students, of growing needs and opportunities.

"We have a huge shortage here because of the sheer concentration of companies," says Kathleen Milnes, a vice president at the Public Affairs Coalition of the Alliance of Motion Picture and Television Producers, one of SkillsNet's sponsors. "It used to be just Disney. Now we have DreamWorks and Warner [Bros.], both of which grew from zero to 400 people in two years. And there are the CD-ROM companies and interactive Web content and development. And hardly a film or a commercial is produced that doesn't use visual effects."



Milnes says area schools are already joining the effort. Santa Monica Community College is creating an Entertainment and Information Technology Academy, and two public school districts have launched New Media Academies, with 70 participating teachers. "I wish we'd done this a couple of years ago," she says, "because the demand is so obvious."

Goff is a freelance writer in New York.

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Senior Consultant needed for technical services consulting firm located in Woburn, Mass. Job duties include Analyze, design develop and implement client server based applications using 3 tier architecture. Develop software prototypes and validate them to customers. Define templates for Visual Basic screens and Modular SQL. Redesign and re-engineer systems using Visual C++, Visual Basic, Windows NT and MS SQL Server. Will also use Object Broker, Rdb, C, OLE, ODBC, and object oriented technology. Applicant must have B.S. degree in Computer Engineering or Computer Science. A foreign degree is acceptable if determined to be equivalent by a recognized authority. Applicant must also have 3 yrs. exp in the job duties listed above or an a Programmer/Analyst. 3 yrs. exp. must include 3 yrs of application development in a client server environment and the use of Visual Basic, Rdb, Visual C++, and MS SQL Server. 40hrs/wk, 8:00 am - 5:00 pm, Mon-Fri, $59,448.15/yr. Send 2 resumes and cover letter to: U.S. Department of Labor, Case No. 61605, 19 Staniford St., P.O. Box 61605, Hurley Bldg, 2nd Floor, ALC Unit Government Center, Boston, MA 02114

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Career Survey: Defense

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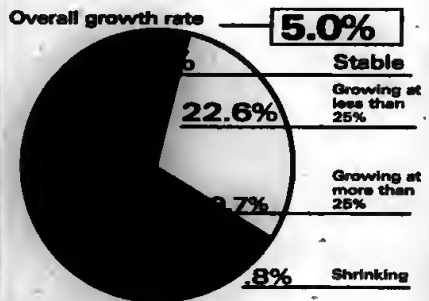
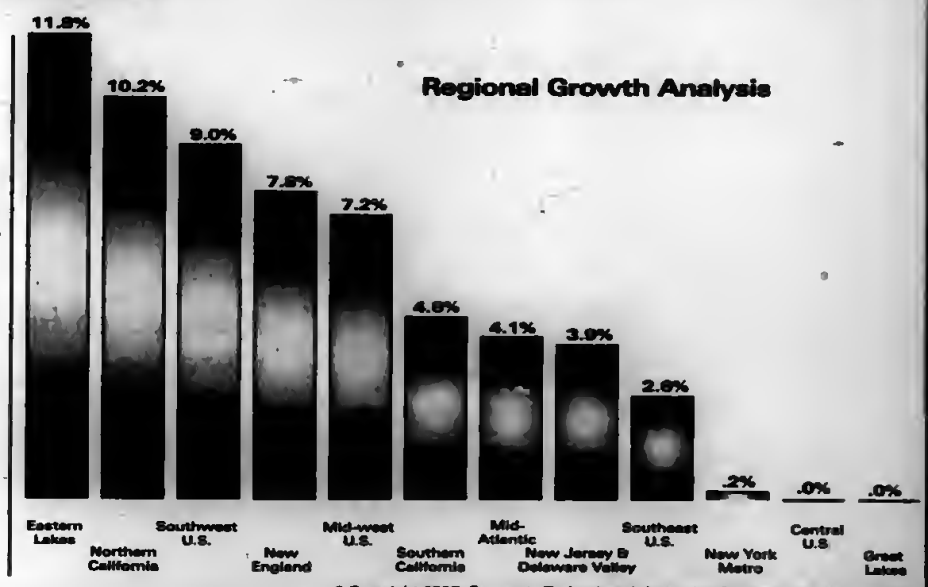


Survey Base: 124 Technology Firms involved in Defense

Survey conducted between October '96 and February '97;

CorpTech, a directory publisher in Woburn, Mass., tracks the U.S. 45,000 technology manufacturers. This survey relates to the 31,042 tracked firms with fewer than 1,000 employees.

Regional Growth Analysis



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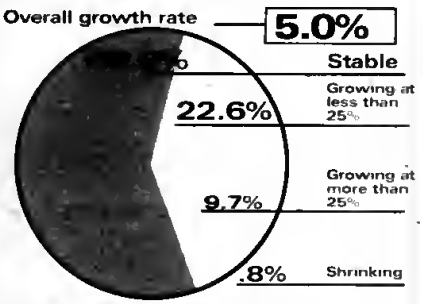

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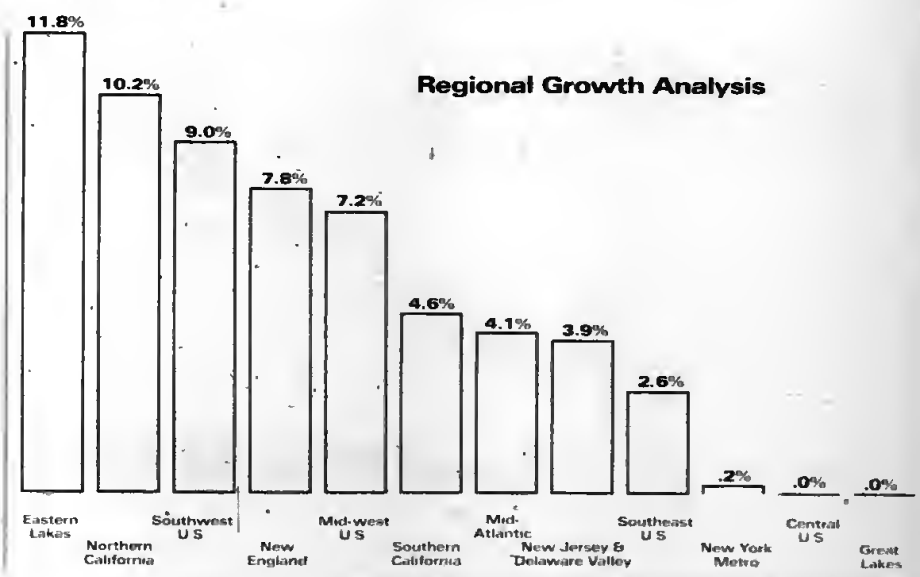

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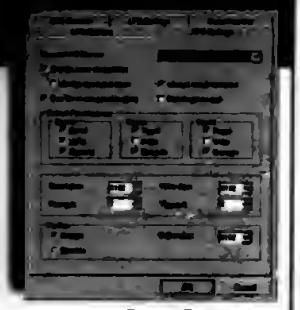

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Executive Vice President/Publisher
Michael R. Rogers
Computerworld Headquarters: 500 Old Connecticut Path, P.O. Box 9171, Framingham, MA 01701-9171
Phone: 508-879-0700, FAX: 508-875-4394

Editor
Paul Gillin

Vice-President Marketing
Bob Winter

Vice-President Consumer Marketing
Gail Odenal

PUBLISHER'S OFFICE: *Assistant to the Publisher*/Laureen Austermann **MARKETING:** *Director, Marketing Communications*/Mary Doyle, *Senior Manager, Marketing Communications*/Elizabeth Phillips, *Manager, Trade Show & Conventions*/Audrey Abbott, *Marketing Manager*/Susan Thaxter, *Marketing Communications Project Manager*/Karen Lesko, *Marketing Specialist*/Emily Dunneen, *Administrative Assistant*/Patty White **CIRCULATION:** *Director of Circulation Management*/Maureen Burke **PRODUCTION:** *Production Director*/Christopher P. Cuoco, Production Manager/Beverly Wolff **SALES PROFESSIONAL DEVELOPMENT:** Operations Director/Cynthia Delany **DISTRIBUTION:** Distribution Manager/Bob Wescott, Traffic Manager/Pat Walker **INFORMATION SYSTEMS:** Vice-President of IS/Walter Crosby

SALES OFFICES

Computerworld Headquarters, 500 Old Connecticut Path, P.O. Box 9171 Framingham, MA 01701-9171
Phone: 508-879-0700, FAX: 508-879-0446

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ADVERTISING OPERATIONS

Display Advertising Production Manager: Paula Wright, Display Advertising Coordinators: Lisa Tanner, Gregg Presby, (508)-879-0700 FAX: (508) 879-0446

CUSTOM PUBLICATIONS

Boston: Director of Publishing Services/Carolyn Medeiros, Project Coordinator/Heidi Broadley, Managing Editor/Peter Bochner, Graphic Designer/Gail Varney, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 879-0700 FAX: (508) 875-6310

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Manager: Don Calamaro, 1856 Windsor Park Lane, Havertown, PA 19083 (610) 446-5372 FAX: (610) 446-5753
Production Coordinator: Peggy Hennessy, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 879-0700 FAX: (508) 879-0446

MARKETPLACE SECTION

Sales Manager/Pat Fales, 50 Washington St., South Norwalk, CT 06854 (203) 857-5125 FAX: (203) 838-1425

COMPUTERWORLD INFORMATION MANAGEMENT GROUP

Vice President/General Manager: Richard Mikita, Vice President: John Carpenter

Computerworld VAR Database: Carol Mullen/ National Sales Manager Account Executive/Sean Weglage, (508) 879-0700 FAX: (508) 879-0184

Computerworld Buyers Database East: Regional Manager, Database Services/Linda Clinton, (508) 879-0700 FAX: (508) 879-0184

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DIRECT RESPONSE SALES

500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

National Accounts Director/Norma Tamburrino, Account Executive/Christine McGovern, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090

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West: Regional Manager/Barbara Murphy, 2171 Campus Drive, Ste. 100, Irvine, CA 92715 (714) 250-0164, Account Executive/Jeff Yake (800) 343-6474 TDD: (800) 203-5867

Internet Careers Site: Jennifer Arispe, Sales Associate, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

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The Week in Stocks

Gainers

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Losers

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INDUSTRY ALMANAC

Read-Rite fights merger

The tussle between Read-Rite Corp. (NasdaqRDRT) and Applied Magnetics Corp. (NYSE: APM) headed into its final rounds late last week with Read-Rite ahead on points and Applied Magnetics still trying to deliver a knockout punch.

Read-Rite Chairman Cyril Yansouni says the battle between the two manufacturers of disk drive recording heads began nine months ago when Applied Magnetics asked Read-Rite in Milpitas, Calif., to purchase it. "They were the calling party," Yansouni says. "[And] the topic of discussion was for us to acquire them."

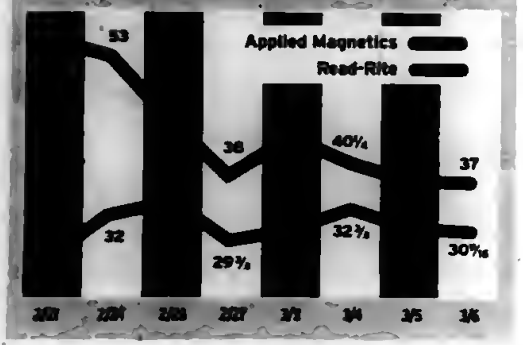
Applied Magnetics in Colusa, Calif., announced Feb. 24 that it had proposed a merger with Read-Rite. Under Applied's plan, Read-Rite shareholders would receive 0.89 shares of Applied common stock for every share of Read-Rite they hold — an attractive deal at the time. After the announcement, Applied's stock price tumbled and Read-Rite's climbed, negating the bonus Applied had offered shareholders.

Read-Rite's board of directors last week voted to reject Applied's proposal and followed that up with a "poison pill" shareholder rights strategy. Applied says it remains committed to its offer and will continue to fight.

Michael Murphy, an industry analyst in Half Moon Bay, Calif., and editor of The California Technology Stock Letter, says Read-Rite is too well-placed to consider a merger. "They're about to cash in on all this pain they suffered last year" he says. "With disk drive demand so strong and their yield returns so high right now, why should they merge?" — Stewart Deck

A REFUSABLE OFFER

Following a merger offer Feb. 24, Applied Magnetics stock price dropped, and Read-Rite stock price rose slightly



Exch	52-Week High	52-Week Low	Company	March 7 Wk Avg Price	Wk Net Change	Wk Pct Change
COMS	81.38	32.63	3 COM Corp (L)	37.75	0.50	-1.5
AI1	65.00	49.63	AMERITECH Corp	61.75	-2.00	-3.9
T	64.50	31.63	AT & T	38.38	3.63	-9.1
ASND	80.25	38.38	Ascend Communications	56.00	2.25	4.3
BNYN	10.75	8.88	Bantam Systems Inc. (L)	2.88	-0.38	11.5
BA1	38.75	18.13	Bay Networks Inc.	19.00	0.00	0.0
BE1	71.38	63.00	Bell Atlantic Corp	67.75	1.75	-3.5
BLS	47.63	35.21	BellSouth Corp	45.11	1.00	3.5
BRKT	42.25	14.00	Brooktrout Technology	16.00	2.75	14.7
CS	41.63	36.50	Cabletron Systems	80.75	0.38	1.2
CSCC	91.25	34.50	Cascade Communications	28.38	-4.63	14.9
CGRN	24.13	10.56	Centigram Communications (L)	10.56	-0.50	8.3
CSCO	73.75	46.50	Cisco Systems Inc	52.50	3.75	-6.7
CLIX	8.25	2.13	Compression Labs Inc. (L)	3.56	-0.88	12.8
CMN1	10.50	4.75	Computer Network Tech.	3.88	0.00	0.0
XCOM	12.75	4.75	CrossCom	8.13	-0.44	3.1
DIGI	38.88	12.63	DSC Communications	31.00	0.00	0.0
FORE	44.75	23.50	FORE Systems Inc.	27.25	5.38	16.3
GDC	18.88	7.25	General Datacomm Inds. (L)	8.00	0.25	3.2
GSX	46.75	34.00	General Signal Networks	45.63	-0.38	-0.8
GTE	49.38	37.75	GTE Corp	46.88	-0.11	-0.3
LU	88.63	29.73	Lucent Tech	53.23	-0.18	0.7
MADGF	46.63	8.13	Madge Networks NV	10.00	1.11	10.1
MCIC	37.50	22.38	MCI Communications Corp	33.50	-0.25	-0.7
MNPI	34.50	5.50	Microcom Inc.	11.88	1.88	9.2
NETM	10.88	3.75	NetManage Inc.	3.88	-0.00	1.0
NTRX	10.88	0.88	Netrix Corp	1.75	0.25	7.1
NCDI	16.23	8.00	Network Computing Devices	11.88	-0.75	3.8
NWK	32.50	11.13	Network Equipment Tech	16.00	-0.11	-0.8
NETG	30.25	15.25	Network General	22.75	0.88	4.0
NN	37.25	20.25	Newbridge Networks Corp	31.00	-0.13	-0.4
N1	77.00	49.00	Northern Telecom Ltd.	71.75	-0.25	-0.3
NOVL	15.63	8.75	Novell Inc.	9.63	-0.75	7.2
NYN	33.38	42.88	Nynex Corp	36.75	1.13	-3.2
OCTL	31.75	18.00	Octel Communications Corp	19.13	0.88	4.8
ODSI	27.50	11.21	Optical Data Systems Inc.	17.00	-0.88	-2.2
PAC	41.50	25.88	Pacific Telesis	41.25	0.13	0.5
PCTL	41.25	14.56	Picturetel Corp	16.11	0.25	1.6
PTON	8.00	2.00	Proxicom Inc.	2.38	0.00	2.7
RACO	7.00	3.50	Racotec Inc.	4.00	-0.13	3.2
RETK	10.00	3.38	Retek	4.88	-0.63	11.4
SBC	37.63	46.00	SBC Communications	37.63	0.00	0.7
SFA	20.00	18.00	Scientific Atlanta Inc.	17.63	0.88	2.2
SHVA	87.25	13.38	Shiva Corp (L)	11.00	-2.88	17.2
PON	46.21	36.00	Sprint Corp (H)	45.25	-0.11	-0.8
SMSC	10.75	8.38	Standard Microsystems Corp	8.60	0.11	1.5
USRX	101.50	45.88	US Robotics	37.00	-1.25	-3.1
USW	31.25	27.25	U S West Inc.	25.88	-0.75	-2.1
XIRC	31.13	10.00	Xircom	18.50	1.75	-8.6
XYLN	26.00	17.13	Xylan Corp (L)	18.13	0.13	0.7

Exch	52-Week High	52-Week Low	Company	March 7 Wk Avg Price	Wk Net Change	Wk Pct Change
AALR	15.25	8.11	Advanced Logic Research	10.13	-0.88	-8.0
AAPL	28.88	15.13	Apple Computer Inc.	18.88	0.13	0.6
ABTA	8.50	3.50	AST Research Inc.	4.75	0.00	0.0
CPQ	87.88	38.00	Compaq Computer Corp	78.38	-0.25	-0.3
DELL	16.00	11.75	Dell Computer Corp	15.13	1.63	3.1
GATE	88.63	23.38	Gateway 2000 Inc.	58.38	0.00	0.0
HWP	39.50	37.75	Hewlett Packard Co.	26.38	-0.63	1.1
MUEI	25.00	8.75	Micron International Inc.	19.44	-0.19	1.0
NHPW	65.00	49.00	NEC America	57.25	-0.30	-0.9
SGI	88.13	17.00	Silicon Graphics	26.13	2.11	8.5
SUNW	35.13	18.38	Sun Microsystems Inc.	18.75	-0.56	1.2

Exch	52-Week High	52-Week Low	Company	March 7 Wk Avg Price	Wk Net Change	Wk Pct Change
AMH	16.00	8.13	Amdahl Corp	19.38	0.25	2.5
DGN	26.38	9.00	Data General Corp	20.38	1.50	7.9
DEC	88.25	28.38	Digital Equipment Corp	32.88	-0.63	1.9
IBM	170.13	89.13	IBM	147.00	3.88	2.3
MDCO	20.25	3.88	Meridian Data Inc.	4.13	-0.38	-8.3
NETF	6.11	2.13	NetFrame (L)	2.13	-0.38	-0.3
SQNT	88.13	10.13	Sequent Computer Sys	16.00	1.50	-8.8
SEQS	4.50	1.88	Sequoia Systems Inc.	2.44	-0.25	-9.3
SRA	35.13	18.63	Stratus Computer Inc. (H)	18.75	0.25	0.3
TDM	15.25	8.38	Tandem Computers Inc.	12.88	0.38	0.0
UIS	8.13	3.38	Unisys Corp	6.88	0.13	1.8

Exch	52-Week High	52-Week Low	Company	March 7 Wk Avg Price	Wk Net Change	Wk Pct Change
ADBE	45.13	28.50	Adobe Systems Inc.	35.31	1.31	3.6
AMSWA	7.81	3.63	American Software Inc.	7.00	0.00	0.0
APLX	42.50	18.00	Applix Inc. (L)	19.00	-0.75	7.8
ARSW	82.75	21.38	Arbor Software	30.00	3.00	0.1
ADSK	44.25	18.00	Autodesk Inc.	34.75	1.13	5.3
BGSS	32.88	14.88	BGS Systems Inc. (H)	30.88	2.88	7.9
BMCS	31.00	25.00	BMC Software Inc.	47.13	4.50	10.2
BOOL	31.50	14.00	Boole and Babbage	25.13	1.13	-4.3
BORL	20.21	4.75	Borland Int'l Inc.	8.00	-0.25	3.0
BOBJY	55.50	5.63	Business Objects	11.13	-0.38	-4.8
CAYN	10.88	0.61	Cayenne Software Inc.	4.31	-0.00	-0.0
CNTR	8.75	2.63	Centura Software	3.00	1.06	27.6
COGNF	39.59	16.00	Cognos Inc.	24.75	1.00	4.2
CA	67.88	37.63	Computer Associates	41.88	2.63	5.8
CVN	13.25	5.33	Computervision Corp	6.00	0.00	0.0
CPWR	69.25	32.00	Compuware Corp	64.75	1.31	0.3
CSRE	32.00	10.75	Consensus Inc.	13.50	0.75	5.1
COSFF	10.00	0.19	Corel Corp (L)	0.19	-0.00	-5.7
DWTI	8.25	2.63	Datawatch Technologies Inc.	4.00	-0.06	1.4
FILE	87.00	18.00	Frontier Corp	30.25	1.81	6.5
FRTE	31.75	24.75	Forte Software	29.25	1.25	4.5
FTPS	14.38	4.88	FTP Software Inc.	7.19	-0.19	-2.5
HUMCF	47.63	21.38	Hummingbird Comm. Ltd	30.25	1.30	3.2
HYSW	26.38	9.75	Hyperion Software Corp	20.00	-0.38	-1.8
IRIC	18.00	11.00	Information Resources	14.88	-0.88	2.5
IFMX	36.25	16.00	Informix Corp (L)	16.00	1.63	-9.2
INGR	18.13	7.75	Intergraph Corp	8.00	-0.25	-3.0
LEAF	9.44	1.31	Interleaf Inc. (L)	1.50	-0.38	20.0
ISLI	18.00	7.50	Interworld Inc.	8.13	1.00	11.0
INTU	55.75	26.38	Intuit Inc. (L)	22.50	-0.00	3.0
TLC	30.31	8.00	Learning Co. (The) (L)	9.13	-0.75	7.6
LGWX	22.25	5.25	Logic Works	7.13	0.63	9.6
MAPS	18.00	7.50	Manifold Corp	9.25	0.38	4.2
MATH	9.25	2.75	MathSoft	4.13	-0.13	-8.0
MCAF	65.00	32.88	McAfee Associates	80.63	4.88	9.5
MENT	18.00	7.38	Mentor Graphics	10.31	0.69	7.1
MHG1	21.25	8.00	Micro Focus	19.00	3.00	11.8
MGXI	18.63	4.00	Microgenesis Inc.	5.00	0.00	1.3
MSFT	103.50	47.38	Microsoft Corp	99.11	1.25	1.3
ORCL	31.00	26.00	Oracle Corp	30.88	-2.75	-8.8
PMTC	64.23	33.00	Parametric Technology	52.38	3.25	5.8
PARQ	14.63	1.00	PacePlace Systems Inc. (L)	1.63	-0.00	-1.7
PSFT	50.75	23.38	PeopleSoft	45.38	6.13	15.6
PTEC	20.88	10.50	Phoenix Technologies	17.13	-0.63	3.5
PSQL	13.75	6.21	Platinum Software	10.00	0.00	0.0
PLAT	10.75	8.25	Platinum Technology	14.25	-0.38	2.8
PRCS	23.23	13.13	Progress Software Corp	15.00	1.88	11.1
RNBO	24.00	14.63	Rainbow Technologies Inc.	18.17	0.81	-4.6

Exch	52-Week High	52-Week Low	Company	March 7 Wk Avg Price	Wk Net Change	Wk Pct Change
REDB	31.00	17.13	Red Brick Systems Inc.	21.38	0.75	3.8
SAPE	58.25	49.00	Sapient Corp.	33.50	-4.63	13.1
SCOC	8.38	5.50	SCO Inc.	7.19	-0.00	-0.0
STIT	50.50	32.63	Security Dynamics Tech	37.25	-0.59	1.8
SQAK	39.75	17.00	SQA Inc.	24.00	0.00	0.0
SDTA	19.75	30.88	State of the Art	12.61	0.63	5.2
SSW	81.38	27.00	Stirling Software Inc.	28.38	0.13	0.4
SDRC	37.50	15.00	Structural Dynamics Research	22.25	2.11	10.0
SYBS	31.00	13.60	Sybase Inc.	14.25	-2.19	13.3
SYMC	18.38	8.75	Symantec Corp.	13.25	-0.38	-2.3
SNPS	50.50	29.00	SynOpsys	31.00	-4.00	-11.3
SSAX	25.50	8.25	System Software Assoc.	10.21	0.06	0.6
SYSF	26.38	8.00	Systemsoft Corp.	11.00	-4.88	30.5
TRUV	9.00	3.44	Truevision Corp.	2.94	-0.44	11.5
VIEW	17.00	8.38	ViewLogic Systems	14.63	-0.11	-0.8
VMRK	12.63	3.38	Vmark Software Inc.	7.00	-0.25	-3.4
WALX	15.88	8.13	Walker Interactive Systems	12.63	0.00	0.0
WALL	27.50	12.25	Wall Data Inc.	18.00	1.19	7.0
WANG	28.13	20.38	Wang Laboratories Inc.	21.00	-0.94	-4.3

Exch	52-Week High	52-Week Low	Company	March 7 Wk Avg Price	Wk Net Change	Wk Pct Change
AOL	71.00	22.00	America On Line	43.61	5.50	14.4
BBN	22.75	15.63	BBN Corp	19.69	-0.50	-2.6
CSRV	25.38	8.63	Computerserve Corp.	10.75	0.13	1.2
EDFY	85.75	50.13	Edify Corp.	33.25	2.23	20.5
LCOS	29.25	5.75	Lycos Inc.	16.00	-2.88	-18.0
NETC	44.00	8.00	Netcom On-Line (L)	8.00	-0.75	-7.4
NSCP	75.25	27.50	Netscape Comm. Corp. (L)	27.50	-2.13	-7.2
OMKT	42.25	11.50	Open Market Inc.	12.25	-0.50	-3.5
PSIN	19.50	6.75	PSINet	7.44	-0.69	-8.5
QDEX	18.00	3.88	Quarterdeck Corp (L)	8.00	0.00	0.0
RAPT	68.50	18.75	Rapton Systems	10.00	-0.63	-4.0
SCUR	18.23	3.63	Secure Computing Corp.	7.00	0.00	0.0
SPYG	34.88	9.25	Spyglass Inc. (L)	9.25	1.38	12.9
YHOO	43.88	15.50	Yahoo! Inc.	27.25	-3.38	-11.0

Exch	52-Week High	52-Week Low	Company	March 7 Wk Avg Price	Wk Net Change	Wk Pct Change
AMD	39.88	10.25	Advanced Micro Devices (H)	39.00	3.00	10.8
ADI	29.25	12.75	Analog Devices Inc.	22.88	-0.50	-2.1
CHPS	38.38	8.13	Chips and Technologies	11.50	-1.10	-8.3
CRUS	25.25	10.69	Cirrus Logic	12.75	-0.31	1.8
CY	38.63	9.13	Cypress Semiconductor Corp.	14.13	0.88	8.6
CYRIX	26.38	11.50	Cyrix	23.63	-3.19	-7.2
INTC	165.00	51.38	Intel Corp.	147.50	9.25	3.7
LSI	39.63	17.00	LSI Logic Corp.	39.50	2.00	5.8
LSCC	54.00	30.75	Lattice Semiconductor	40.75	3.25	7.0
MCRL	40.50	12.00	Micrel Semiconductor Inc.	29.75	8.00	17.8
MU	42.00	18.88	Micron Technology (H)	42.00	3.88	10.3
MOT	80.75	44.13	Motorola Inc.	52.00	8.00	8.4
NSM	31.00	13.00	National Semiconductor (H)	30.88	4.38	16.5
TXN	85.63	40.00	Texas Instruments	83.63	8.50	11.0
VLSI	25.25	10.50	VLSI Technology	12.25	-0.13	-0.7
XLNX	48.75	24.50	Xilinx	46.25	1.50	3.3
ZILG	40.50	14.88	Zilog Inc.	24.00	0.75	3.2

Exch	52-Week High	52-Week Low	Company	March 7 Wk Avg Price	Wk Net Change	Wk Pct Change
APCC	31.50	8.50	American Power Conversion	19.00	1.38	6.5
ADPT	46.88	17.00	Adaptec Inc.	30.88	2.56	7.1
CREX	7.63	1.31	Cabletron Corp.	1.38	-0.00	-4.3
CREAF	13.13	3.88	Creative Technology Ltd*	11.31	-0.63	-5.5
DACE	24.50	3.75	Data Race Inc.	12.75	-0.50	-3.8
DTM	12.50	8.25	Datatape Corp.	10.60	0.25	3.4
EMC	39.88	10.00	EMC Corp.	38.00	0.00	0.0
EMUX	21.50	8.00	Emulex Corp.	30.88	0.69	4.4
ESCC	20.00	19.00	Exabyte and Sutherland	26.13	2.63	11.2
EXBT	22.75	8.00	Exabyte	11.38	0.00	3.6
IBUF	4.13	1.38	Intelligent Info. Systems	1.00	-0.00	-3.1
IOM	15.38	3.00	Iomega Corp.	15.38	-0.13	-0.8
IPLS	8.33	3.38	IPL Systems Inc.	2.00	0.00	0.0
KMAG	37.00	17.63	Komag Inc.	31.50	0.50	1.6
MTSI	20.75	12.00	Micro Touch Systems Inc.	16.00	0.88	1.4
PEAR	27.50	10.00	Pear Technology Group	10.75	0.00	0.0
PMCL	18.00	8.00	Pinnacle Micro Inc.	8.00	-0.44	-11.1
QUM	8.75	3.75	QMS Inc.	5.00	0.25	5.3
QNTM	46.00	10.88	Quantum Corp	40.13	0.73	3.0
ROUS	4.88	0.31	Radius Inc.	0.38	0.00	0.0
SEG	50.00	18.13	Seagate Technology	47.50	-0.75	-1.8
STK	50.50	30.00	Storage Technology	42.88	1.11	2.7
STLC	8.75	0.38	Streamlogic Corp	0.61	-0.01	-4.8
TEK	32.25	20.75	Tektronix Inc.	30.25	1.00	3.1
WDC	77.00	17.13	Western Digital Corp.	19.75	-1.25	-8.0
XRX	63.75	41.88	Xerox Corp (H)	61.88	-0.25	0.4

Exch	52-Week High	52-Week Low	Company	March 7 Wk Avg Price	Wk Net Change	Wk Pct Change
AMSY	37.13	16.00	American Mgmt. Systems	18.63	1.23	7.2
ANLY	80.00	18.50	Analysts Int'l.	23.00	0.73	3.0
AUTO	45.75	26.50	Auto Data Processing	44.88	1.88	4.6
BDMI	61.50	32.00	BDM International Inc.	47.00	2.50	8.0
CATP	37.25	15.00	Cambridge Tech. Partners	24.50	0.75	3.2
CEN	54.00	32.38	Cendant Corp.	39.88	0.75	1.9
CDC	33.00	20.00	Comdisco Inc.	31.63	0.00	1.6
CHRZ	54.00	18.00	Computer Horizons	33.13	7.00	31.2
CSC	88.50	64.13	Computer Sciences	67.75	1.13	-1.6
TSK	47.50	28.00	Computer Task Group	42.25	-1.25	-2.9
CPU	50.00	8.00	Cor@USA Inc.	30.13	1.00	4.0
CDAT	28.63	12.75	Control Data Systems Inc.	13.75	1.38	-8.1
EGGS	13.88	4.00	Eggheads Discount Software	4.00	-0.06	1.3
EDS	63.38	40.75	Electronic Data Systems Corp	45.38	-0.50	-0.8
INAC	40.63	15.00	Inacom Corp	30.00	-3.25	12.4
INEL	11.50	3.31	Intelligent Electronics (L)	3.44	-0.19	-3.2
KEA	27.00	13.75	Keane Inc.	26.38	-4.50	12.7
MICA	28.00	0.00	Micronica Inc.	13.00	1.50	7.8
PAYX	63.63	30.88	Paychex	47.50	0.00	0.0
PMS	55.00	33.13	Policy Management Sys.	43.00	0.50	1.2
REY	80.63	19.38	Reynolds and Reynolds	27.75	-0.50	1.8
SCBI	38.00	14.44	SCB Computer Tech. Inc.	18.00	0.00	0.0
SEIC	26.38	17.75	SEI Corp	23.75	0.63	2.8
SMED	72.13	42.88	Shared Medical Systems	57.25	2.31	4.2
SSPE	33.50	18.75	Software Spectrum Inc.	21.00	-1.00	-4.6
SMDT	50.75	21.88	Sundard Data Systems (H)	47.75	6.75	3.8
VST	19.75	9.00	VanStar Corp.	16.00	2.73	5.1

KEY: (H) – New annual high reached in period (L) – New annual low reached in period

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How to contact Computerworld

TELEPHONE/FAX

Main phone number ..... (508) 879-0700
All editors unless otherwise noted below
Main fax number ..... (508) 875-8931
24-hour news tip line ..... (508) 820-8555

E-MAIL

Our Web address is www.computerworld.com.
All staff members can be reached via E-mail on the Internet using the form
firstname_lastname@cw.com.
All IDG News Service correspondents can be reached using the form:
firstname_lastname@idg.com.

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to:
letters@cw.com.
Please include your address and telephone number.

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701

SUBSCRIPTION/BACK ISSUES

Phone ..... (800) 669-1002
E-mail ..... circulation@cw.com.
Back issues ..... (508) 820-8129

REPRINTS

Phone ..... (508) 820-8125

CONTACTING CW EDITORS

We invite our readers to call or write with comments and ideas. It is best to submit ideas to one of the department editors as well as to the appropriate beat reporter.

Editor Paul Gillin (508) 620-7724
Executive Editor Maryfran Johnson (508) 820-8179

Department Editors/News

News Editor Patricia Keefe (508) 820-8183
Sections Editor Kevin Fogarty (508) 820-8246
Assistant News Editor Neal Weinberg (508) 820-8177
Assistant Sections Editor Michael Goldberg (508) 620-7789
Online Editor Johanna Ambrosio (508) 820-8553
Online News Editor Judith H. Bernstein (516) 266-2863
Associate Editor, News Mitch Betts (202) 347-6718

Senior Editors/News

Groupware, E-mail, messaging Barb Cole (619) 728-8858
LANs, operating systems Laura DiDio (508) 820-8182
Network/systems management Patrick Dryden (817) 924-5485
App development components Sharon Gaudin (508) 820-8122
IS management Thomas Hoffman (201) 587-0090
IS careers Julia King (610) 532-7599
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Internet Mitch Wagner (415) 548-5513
Internetworking Bob Wallace (508) 820-8214

Senior Writers/News

Mobile computing, social issues Mindy Blodgett (508) 820-8168
PCs, servers, net computers April Jacobs (508) 820-8121
Security, government Sharon Machlis (508) 820-8231
Mainframes, high-end storage Tim Ouellette (508) 820-8215

Staff Writers/News

@Computerworld Stewart Deck (508) 820-8135
Telecommunications Kim Girard (508) 820-8223
New products, multimedia, low-end storage Matt Hamblen (508) 820-8167
Intranets Justin Hibbard (415) 548-5525
@Computerworld Patrick Thibodeau (508) 820-8143
Client/server software, Unix apps Randy Weston (508) 628-4869
@Computerworld Wylie Wong (415) 548-5581

Opinions

Technical Editor Charles Babcock (415) 548-5511
Columns Editor Mitch Betts (202) 347-6718
Staff Columnist Frank Hayes (505) 253-0100

Department Editors/Features

Technology reviews/ Buyer's Guide James Connolly (508) 820-8144

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Associate Editors/Features

Managing Rich Sala (508) 820-8118

IDG News Service Correspondents

Paris bureau chief Jeanette Borzo (33) 1-4904-8001
Munich correspondent Torsten Busse (49) 89-811-6057
UK correspondent Kristi Essick (44) 171-416-0701
Hong Kong bureau chief Jon Sullings (852) 2535-4661
Tokyo correspondent Bob Guth (81) 33-358-6122
Taipei correspondent Terho Uimonen (88) 62-500-6523

Research

Bob Fink, senior research manager (508) 820-8118; Kevin Burden, senior researcher; Laura Hunt, research analyst; Amy Malloy, assistant researcher; Stefanie McCann, senior graphics coordinator; Mari Keefe, online researcher.

Copy Desk

Ellen Fanning, managing editor (508) 820-8170; Roberta Fusaro, assistant managing editor; Christina Acardi Maguire, Jamie Eckle, senior copy editors; Michelle Davidson, Kimberly Gelland, senior production copy editors; Pat Hyde, David Ramel, Jeremy Selwyn, Keith Shaw, copy editors; Scott Burnell, Monica Sambataro, online copy editors.

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Administrative Support

Linda Gargione, office manager (ext. 8176); Connie Brown (ext. 8178), Lorraine Witzell (ext. 8139), Rita Jones (ext. 8172), editorial assistants; Chris Flanagan, West Coast editorial assistant, (415) 548-5565.

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Alan Alper, editor (508) 820-8135; Mary Brandel, executive editor; Anne McCrory, Catherine McCreery, Joyce Chutchian-Ferranti, managing editors; Kimberlee A. Smith, assistant managing editor and online coordinator; Stephanie Faucher, art director

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Contact: Johanna Ambrosio, Online Editor, (508) 820-8553 or johanna_ambrosio@cw.com.

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UUnet readies ISDN hybrid

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company, WorldCom, Inc.

The immediate advantage offered to users, according to UUnet, is that IDSL will be much easier to install and configure than ISDN. In the long term, IDSL will offer higher speeds than 128K bit/sec., which is the top ISDN speed. The low end of IDSL starts at 128K bit/sec.

NEED FOR SPEED

- Uunet's new IDSL service fills a gap in remote access offerings
- Dial-up connectivity: Up to 28.8K bit/sec.
- Emerging modem technology: Up to 56.6K bit/sec.
- ISDN: Up to 128.8K bit/sec.
- IDSL: Up to 768K bit/sec.
- T1: Up to 1.5M bit/sec.

Carl Leubsdorf, webmaster at Calvert Group in Bethesda, Md., said the service would make telecommuting more efficient. Most of the financial institution's information systems staff, along with traveling staff such as salespeople, have dial-up connections to the company. Some also have Integrated Services Digital Network (ISDN).

"I could connect at a much higher speed than ISDN but without rewiring anything," Leubsdorf said.

This emerging class of remote access technology has the support of several other providers, including US West, Inc., which already has the technology in limited production.

It was designed to fill a price and performance niche between high-speed modems and ISDN lines on the one hand and, on the other hand, high-speed T1 connections, which move data at up to 1.5M bit/sec. but cost much more.

BENEFITS

UUnet's initial IDSL offering, a low-end service, will be available this month using conventional ISDN equipment on the customer premises. This differs from other flavors of DSL, which require specialized equipment.

The company's IDSL service will be delivered in phases and was designed to offer several advantages over conventional dial-up connectivity and ISDN. Eventually, it is supposed to be much faster and more scalable than conventional dial-up and ISDN and able to move data at up to 768K bit/sec., compared with ISDN's 128K bit/sec.

But analyst Joel Maloff, president of The Maloff Co. in Dexter, Mich., is skeptical. He noted that IDSL technology is still emerging and cautioned against using it for mission-critical applications. He said IDSL — a nonstandard technology — is likely to encounter the same problems winning widespread acceptance as other high-speed connectivity options such as the already-standardized ISDN and Asynchronous Transfer Mode.

Maloff also noted that higher-end IDSL requires specialized equipment and that all flavors of IDSL are likely to be available only in major metropolitan areas.

UUnet officials wouldn't comment on the pricing or rollout of the product, which will be announced at Internet World/Spring '97 in Los Angeles on Wednesday.

FCC reviews Internet access fees

By Kim Girard

USERS SAY there's no way Internet service providers should pay access fees to local telephone companies for using their networks to connect to the Internet.

And for now, Federal Communications Commission Chairman Reed Hundt agrees with the masses.

Although most electronic-mail messages sent to the FCC protesting access fees have been from consumers, business users also questioned how the regional Bell operating companies (RBOC) can justify their demand for more money.

The RBOCs maintain that they need more money to pay for network upgrades to handle exploding Internet traffic.

"I don't like this idea," said Brian Boyd, director of Internet services at United Video Satellite Group in Tulsa, Okla., where all 1,200 employees have Internet access.

COMPUTERWORLD

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- FCC Access Fee Reform: www.fcc.gov
- Comments on the Access Charge Reform: www.fcc.gov/isp.html

Boyd said he would be hard-pressed to restrict online access, even if the company's main online provider, UUnet Technologies, Inc., hiked its rates.

Peter Palms, who runs a nonprofit humanitarian organization focused on Russia, said slapping a usage tax on Internet access "is like taxing the air you put in your tires."

By using the Internet, Palms cut his fax bill from $36,000 to $120 per year. Palms said he uses the Internet for 10 to 12 hours per day.

"The desire to charge [access fees] is an expedient one — a desire to get more money," he said.

Joel Maloff, president of The Maloff Co., a consultancy in Dexter, Mich., said access fees could harm firms if the provider passes on a flat surcharge to users of dedicated and dial-up lines. "My first question is — other than for dial-up access where the clock is running — how are you going to assess access fees for dedicated lines?" he said.

Hundt and three other commissioners are looking into access fees. No decision date has been set, but a U.S. Senate Commerce Committee hearing on Internet usage fees is scheduled for Wednesday.

3Com software to address network traffic congestion

By Bob Wallace

3COM CORP.'s initiative to help eliminate network traffic jams during peak hours won't fully benefit users with multivendor systems until at least year's end, analysts said.

3Com's TranscendWare software will let information system managers prioritize LAN data, thus boosting performance without additional hardware.

TranscendWare will ship around midyear for 3Com products that range from adapters to wide-area network gear, but other vendors must implement a specification in their own products for users in mixed environments to benefit.

"Everyone from Cisco to Xylan will implement these specifications once they become standards," said Craig Johnson, director at Current Analysis, Inc., a consulting and research firm in Ashburn, Va. "The standards will present a lowest common denominator for all. The glass-is-half-full view is that there could be standards by year's end."

CAUTIOUS OBSERVER

Alan Robson, who has 3Com and Cisco Systems, Inc. equipment, said he is cautious.

"It definitely piques my interest, but I don't see this as a real product for some time, with that [time period] depending largely on how the standards process goes," said Robson, director of network systems at Cox Target Media, Inc. in Largo, Fla. The company's subsidiary, Val-Pak Distributing, Inc., makes coupon packets for consumers.

3COM'S TRANSCENDWARE SOFTWARE PLAN

Benefits

- Lets users prioritize network traffic during peak periods
- Lets users set policies on how the network is used
- Helps boost performance of networked applications
- Doesn't require new hardware
- Works with 3Com products
- Spans the desktop to WAN

Drawbacks

- Full benefits not yet realized in multivendor networks
- Details on pricing are sketchy
- Policy setup and creation could devour resources

"TranscendWare would have a direct impact on our business because it would let me prioritize the transmission of mailing addresses [for the coupon packages] to our center in Las Vegas," Robson said. "This task requires the top priority when it's done. If we don't get this mission-critical data out in time, the coupons go out late, which makes us [financially] liable."

One 3Com shop considering TranscendWare is Yamaichi International America, Inc. "As a brokerage, we'd use TranscendWare to give our traders top priority for network bandwidth during their regular business hours, then switch to IS for Web access and then after-hours to administration for back-office applications," said Kathy James, a network administrator at Yamaichi, a New York subsidiary of Yamaichi Securities.

Although other vendors, including Cabletron Systems, Inc., offer packages that let IS managers set networking privileges on a per-user basis, analysts said 3Com's TranscendWare is the most complete.

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COMMENTARY

Fits and starts in the Java revolution

David Coursey

There are, a friend tells me, three kinds of IS managers when it comes to thin-client computing: Those who get it immediately, those who get it once it's explained and those who never get it. Each group exists in about equal numbers, according to some focus groups my friend's company has run.

This week I offer an update on what's happening with network computers, both as hardware and as a universal target platform for corporate developers. There's good news and bad.

First, the bad:

- Some Java developers don't seem to understand that thin is in, and they're writing applications for Java the same two ways they write them for Windows: big and bigger. Thus, you can expect these developers to deliver a new generation of oversize applications to an underwhelmed world.
- Even if Java remains an open standard on the client (which looks more and more doubtful), I have grave concerns about whether it can remain open on the server. The companies that support Java are mostly big server vendors. It's fine with them if an application can run on any client platform, but it's another thing entirely for a Java-based server application to run on anyone's server.
- Microsoft seems intent on throwing everything it possibly can in the path of Java. The strategy hasn't worked very well so far, perhaps because it's such a mishmash. After all, Microsoft is pushing its NetPC as a network computer-killer, the possibility of multiuser Windows is in the wings, and even Windows CE has been touted for ultra-thin clients.
- My sources say JavaSoft seems to be more involved in internal matters than in the task of staying ahead of Microsoft. There's a feeling that JavaSoft won't be able to keep up. That could lead to Microsoft and others extending the language enough that "common" Java will become more of a minimum standard than something developers actually use.

But it's time to cheer up. The news isn't all bad. Here's the good stuff:

- Major vendors see their future in thin clients. IBM has become a rabid Java supporter — and it promises to use a standard implementation. Lotus is serious about Java. That's no surprise, given that IBM owns Lotus. But who would have guessed that Corel would be a leader in Java applications? Really *big* Java applications, admittedly, but at least it's a start.
- There's tremendous interest in Java among start-up developers. In screening products for my upcoming conference, Internet Showcase, I've seen some real flamethrower Java applications. I can't write much about these applications because they're still under nondisclosure agreements, but I'm confident that Java will become a real platform and that there will be interesting software running on it.
- People are slowly learning that the network computer "standard" isn't so much a hardware standard as a means of describing a standard, Java-based application platform that will run atop a variety of hardware/operating system combinations.
- There's genuine excitement in the developer community about the opportunities Java presents. And the venture capital community sees Java as the next big opportunity, which means the dollars will flow.

Coursey is an analyst and editor/publisher of "Coursey.com," a newsletter available at www.coursey.com. You can send him your own news, good or bad, at david@coursey.com.

Is Java more 'open' on SPARC?

Charles Babcock

What exactly does the term "open" mean when it's used with Java?

Floating-point consultant Jerome Coonen claims Java runs better on SPARC than on PC architectures. Does Java, inadvertently or otherwise, favor some platforms over others?

I have taken Sun Microsystems at its word that Java is platform-neutral. To me, that means Java bytecode crosses the network to do its work anywhere there is a Java Virtual Machine capable of receiving it. But Coonen's paper, "A Note on Java Numerics," casts doubt on Java's strict neutrality.

Coonen is a consultant on floating-point issues for Apple, Microsoft, SunSoft and Exponential Technology. For 10 years, he battled inside Apple for a correct IEEE-implementation of floating-point operations on the Macintosh. His stance stemmed from his work with University of California at Berkeley mathematics professor W. Kahan on the IEEE floating-point standard. Kahan won the Association for Computing Machinery's Turing Award for his IEEE work, so his former student is unlikely to take it lightly.

Coonen inspected how Java handles floating-point operations on different platforms. Floating-point numbers are used in big scientific calculations that require, after a certain number of digits, that a number be rounded off and a decimal point inserted. Coonen concluded that Java "as currently specified is *not* architecture-neutral."

Java, Coonen writes, handles floating-point issues efficiently on Sun's SPARC and Silicon Graphics' RISC microprocessors. But Java on the PowerPC "has doubled the number of instructions ... and forced one gratuitous rounding [off]." When it comes to some Pentium systems, Coonen writes, Java "is nearly doubling the memory traffic and increasing the instruction count by half. This is not what the designers of the [Intel] x86 floating-point unit had in mind."

Coonen continues, "The examples show that Pentium and PowerPC users pay twice: less accurate results because of imposed intermediate operations, and lower performance due to time wasted on the unwanted operations."

If Coonen is correct, that isn't what we expect from a platform-neutral language. I've asked Sun for a response to his comments, and I'm sure I'll get one. Coonen ventures the idea that Sun was seeking to get uniformity of results across platforms. Coonen scoffs at the idea of uniformity in the name of portability. What he wants is strict numerical accuracy.

Coonen asserts that each hardware platform should get its own best chance to come up with the exact answer. Sun should follow the IEEE standard more precisely for each platform. Its existing approach means that some results will be off more than they have to be, even though they may be in cross-platform agreement.

This may seem like a trivial issue. For most of us, results won't differ enough to worry about. Also, mathematicians may disagree on the best way to execute floating-point operations.

But the high and mighty have pooh-poohed the floating-point issue before. Remember how Intel said the Pentium fault wasn't worth worrying about? Just one in 9 billion possible calculations would yield a bad result, Intel said at first. (This turned out not to be the case.)

So until we get that fuller explanation, I have to conclude that Java has been optimized for SPARC at the expense of PC users. And I'd like to know if Java is an "open" language or merely a cross-platform one, with some platforms more equal than others?

Babcock is Computerworld's technical editor. His Internet address is charles_babcock@cw.com.

The Back Page

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Dispatches & [illegible] from the fringes of the [illegible] frontier

Patent watch

Recently issued U.S. patents (Patent number, inventor/assignee, date issued)

Computerized dispenser for soda and beer that minimizes foaming, "topping off" and waste. The mechanism exploits gravity — rather than pressurized gas — and uses a low-turbulence nozzle. The computer determines how long to dispense the beverage based on the size of the selected cup, tracks inventory and sends data to a host computer for cumulative sales information. (5,603,363, Exel Nelson Engineering in Madison, Wis., Feb. 18)

System for transmitting an electronic advertisement within the vertical blanking interval of a VDT. The ad is sent via an analog video broadcasting network to PC users. The server can be loaded with demographic data so the ad is sent to only certain end users. (5,604,542, Intel, Feb. 18)

(Source: MicroPatent (www.micropat.com))

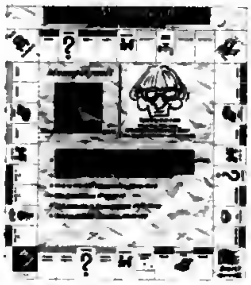
The Axis, an Internet appliance from Uniden America in Fort Worth, Texas, handles cordless telephone calls and electronic mail. The price is [illegible] $299.

WWW.BRAIN-SURGERY.COM

Ever want to sidle up to a doctor at a party and say, "Doc, I've got this brain tumor the size of a walnut. What do you think?" Get a free, interactive consultation with neurosurgeon John Mangiardi at his Web site (address above), which aims to demystify brain surgery.

Fame, no fortune

Test your coding skills by competing for the Programmer of the Month (POTM) trophy. The POTM master posts a riddle at the Web site www.cs.washington.edu/homes/corin/POTM.PAGES/ and judges the most efficient source code. Problems have included making a crossword puzzle from a word list.



"RESISTANCE IS FUTILE!" is the tag line for the satirical Microsoft Monopoly page (www.gsoft.com/micah/monopolysoft/), where visitors can play a version of the famous board game. Squares such as Marvin Gardens, Luxury Tax and Go to Jail have been replaced by Microsoft products, Upgrade Tax and Consent Decree.

IN THE SAME VEIN, check out the Bill Gates Personal Wealth Clock (www.webho.com/WealthClock/). Recently, it was at $27.9 billion, based on Microsoft's stock price. That's about $104 for every man, woman and child in the U.S.

t Send your alt.cw contributions to **mbetts@cw.com**. If your item is used, you'll receive a cool T-shirt.

Inside Lines

You do the math

Apple Chairman Gilbert F. Amelio may not be revealing exactly how many people will be laid off March 14, but a worker in Apple's shipping department said more than 25,000 empty moving boxes arrived at the Cupertino, Calif., headquarters during the past two weeks. How many corrugated cardboard cubes does the average departing worker receive to remove personal items? Three? Four? Five?

Mainframe Marketing 101

At last week's Sirius user conference, keynote speaker Terry Keane of Stalking Technologies in Phoenix urged conferees to take a cue from the PC and Unix worlds and market themselves as "information manufacturers" instead of traditional corporate cost centers. "You people couldn't market yourselves out of a paper bag," boomed. Keane also worried about the ramifications of having 2,500 highly skilled conferees in complete, especially in earthquake-prone San Francisco. "I'm a little scared to have so many MVS people here in one room. What if something happened?" he said.

What a relief

Speaking to attendees at The Yankee Group's annual networking conference in Orlando, Fla., last week, company founder Howard Anderson predicted that the year 2000 problem won't be resolved until 2000 at the earliest. But Anderson saw a silver lining: "Once the year 2000 problem is solved, you won't have to worry about it for another 8,000 years" when four-digit date fields have to be expanded to five digits.

Gateway backs software plans

Gateway Computer in Hardman, [illegible] the new owner of Dun & Bradstreet's software division, is abandoning plans to become an enterprise-software vendor, Computerworld has learned. Gateway is apparently dumping its plans for a new [illegible] application that will continue to support the company's existing product through 2000. A Gateway spokesman confirmed the decision, which will affect between 70 and 80 employees.

HP, Microsoft plan Unix, NT collaboration

Hewlett-Packard President [illegible] Platt and Microsoft Chairman Bill Gates will [illegible] at HP's Palo Alto, Calif., headquarters March 19. [illegible] on the two companies' [illegible] joint efforts to "simplify enterprise computing" for their respective customers. One [illegible] the announcement [illegible] to be how HP and Microsoft will collaborate to further "Windows NT and Unix integration," sources close to Microsoft said.

Tempus fugit

Some Microsoft Windows 95 and Windows NT users in Australia may be slightly out of sync with their fellow network users. According to an HP user from Down Under, some Windows 95 and Windows NT clocks on the Australian East Coast have automatically taken off daylight-saving time on Sunday, March 2. That would have been OK, except that daylight-saving time doesn't officially end in that part of Australia until March 30. What makes matters worse, the greater chaos, is that the same thing happened last year. A spokesman for Microsoft said, "This is the first we've heard of it, and we have no idea why it's happening."

At its annual user meeting next month, the Electronic Messaging Association (EMA) will demonstrate a new specification for sending voice messages among disparate messaging systems over the Internet. The Voice Profile for Internet Mail (VPIM) standard is based on Simple Mail Transport Protocol (SMTP) and will work with any SMTP-compliant mail system. EMA officials said products that support VPIM should start to roll out in about six months. You can use E-mail or voice mail to reach news editor Patricia Keefe. She's at patricia_keefe@cw.com or (508) 820-8183.

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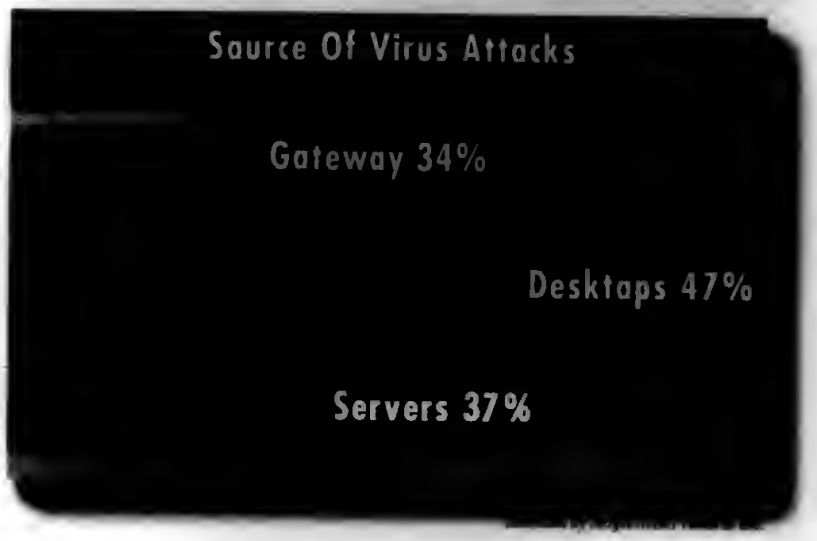

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